

**2022**  
**San Francisco Existing Building Code**  
**Amendments to the**  
**2022 California Existing Building Code, Title 24, Part 10**

**Operative date: January 1, 2023**

# PROPOSED SAN FRANCISCO EXISTING BUILDING CODE AMENDMENTS

2022 Edition

## Text Format:

*Explanatory remarks are boxed and italicized.*

Unchanged language from the 2022 California Codes is shaded, and may include bold and/or italicized formatting.

San Francisco amendments are printed in unformatted ("plain") text, and may include **bold** and/or *italicized* formatting.

Repealed San Francisco amendments appear in ~~plain and strikeout~~.

New San Francisco amendments appear underlined.

## Marginal Markings:

[ ← ] An arrow represents the location of language that has been deleted by San Francisco from the 2022 California Code.

## Chapter 1 SCOPE AND ADMINISTRATION

*No San Francisco Amendments.*

## Chapter 2 DEFINITIONS

### SECTION 202 – GENERAL DEFINITIONS

*Revise this definition as follows:*

**SUBSTANTIAL STRUCTURAL ALTERATION.** An alteration in which the gravity load-carrying structural elements altered since the original construction support more than 30 percent of the total floor and roof area of the building or structure. The areas to be counted toward the 30 percent shall include mezzanines, penthouses, and in-filled courts and shafts tributary to the altered structural elements.

## Chapter 3 PROVISIONS FOR ALL COMPLIANCE METHODS

### SECTION 304 – STRUCTURAL DESIGN LOADS AND EVALUATION AND DESIGN PROCEDURES

~~303.3.2~~ 304.3.2 *Revise item 2 as follows:*

**304.3.2 Compliance with reduced seismic forces.** Where seismic evaluation and design is permitted to use reduced seismic forces, the criteria used shall be in accordance with one of the following:

2. Except where these requirements are triggered by Section 503.11, structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A as specified in Items 2.1 through 2.5 and subject to the limitations of the respective Appendix A chapters shall be deemed to comply with this section.

~~303.4~~ 304 *Add the following sections:*

**304.4 Minimum Lateral Force for Existing Buildings.**

**304.4.1 General.** This section is applicable to existing buildings when invoked by SFEBC Section 503. This section may be used as a standard for voluntary upgrades.

An existing building or structure which has been brought into compliance with the lateral force resistance requirements of the San Francisco Building Code in effect on or after the dates shown

in Table ~~303.4.1~~ 304.4.1 shall be deemed to comply with this section except when a vertical extension or other alterations are to be made which would increase the mass or reduce the seismic resistance capacity of the building or structure. Where multiple building types apply, the later applicable date shall be used. Where none of the building types apply, compliance shall be at the discretion of the Director. Building type definitions are given in ASCE 41, Table 3-1.

**TABLE ~~303.4.1~~ 304.4.1 – DATES REQUIRED TO DEMONSTRATE BUILDING COMPLIANCE**

<i>Building Type</i>	<i>Date of Compliance</i>	<i>Model Code (for reference)</i>
Wood Frame, wood shear panels (Types W1 & W2)	1/1/1984	UBC 1976
Wood Frame, wood shear panels (Type W1A)	7/1/1999	UBC 1997
Floor areas greater than 3,000 ft <sup>2</sup> per level		
Steel moment-resisting frame (Types S1 & S1a)	12/28/1995	UBC 1994
Steel concentrically braced frame (Types S2 & S2a)	7/1/1999	UBC 1997
Steel eccentrically braced frame (Types S2 & S2a)	1/1/1990	UBC 1988
Buckling-restrained braced frame (Types S2 & S2a)	1/1/2008	IBC 2006
Light metal frame (Type S3)	1/1/2008	IBC 2006
Steel frame w/ concrete shear walls (Type S4)	12/28/1995	UBC 1994
Steel plate shear wall (Type S6)	1/1/2008	IBC 2006
Reinforced concrete moment-resisting frame (Type C1)	12/28/1995	UBC 1994
Reinforced concrete shear walls (Types C2 & C2a)	12/28/1995	UBC 1994
Tilt-up concrete (Types PC1 & PC1a)	7/1/1999	UBC 1997
Precast concrete frame (Types PC2 & PC2a)	1/1/2008	IBC 2006
Reinforced masonry (Type RM1)	7/1/1999	UBC 1997
Flexible diaphragms		
Reinforced masonry (Type RM2)	12/28/1995	UBC 1994
Stiff diaphragms		
Seismic isolation or passive dissipation	7/1/1992	UBC 1991

**~~303.4.2~~ 304.4.2 Wind forces.** Buildings and structures shall be capable of resisting wind forces as prescribed in San Francisco Building Code Section 1609.

**~~303.4.3~~ 304.4.3 Seismic forces.** Buildings and structures shall comply with the reduced seismic forces, as defined in Section ~~303.3.2~~ 304.3.2. The building separation limitations of Section ASCE 7-16 Section 12.12.3 need not be considered.

When upper floors are exempted from compliance by Section 503.11.1, the lateral forces generated by their masses shall be included in the analysis and design of the lateral force resisting systems for the strengthened floor. Such forces may be applied to the floor level

immediately above the topmost strengthened floor and distributed in that floor in a manner consistent with the construction and layout of the exempted floor.

## **SECTION 314 – EXISTING HIGH-RISE BUILDINGS [SFM]**

*314.27 Revise this section as follows:*

### **314.27 Automatic sprinkler system – Existing high-rise buildings.**

**314.27.1 General.** Regardless of any other provisions of this code, every existing high-rise building as defined in San Francisco Building Code Chapter 2 shall be provided with an approved automatic fire sprinkler system conforming to NFPA 13.

Existing high-rise buildings that are also qualified historical buildings as defined in California Health and Safety Code Section 18950 shall be provided with an approved automatic fire sprinkler system when and as required by the State Historical Building Code.

#### ***EXCEPTIONS:***

1. An apartment house, condominium or other building used as a Group R, Division 2 Occupancy as defined in this code excluding tourist hotels as defined in Section 41.4 of the San Francisco Administrative Code.
2. A mixed-use occupancy building containing a Group R, Division 1 or Group R, Division 2 Occupancy.

**314.27.2 Additional requirements.** The following additional requirements shall also apply:

**314.27.2.1 Valves and devices.** A sprinkler control valve and a waterflow detecting device shall be provided at the lateral connection to the riser for each floor.

**314.27.2.2 Signals.** A separate and distinct supervisory signal shall be provided to indicate a condition that will impair the satisfactory operation of the sprinkler system. This shall include, but not be limited to, monitoring control valves, fire pump power supplies and pump running conditions. Such supervisory signals shall be annunciated at a constantly attended building security control center; when that location is not under constant supervision by qualified personnel, the signals shall be transmitted to a remote monitoring station in accordance with NFPA 72.

**314.27.2.3 Water supply.** The minimum water supply requirement for the sprinkler shall be determined without regard to inside hose stream demand.

**314.27.2.4 Standpipe conversion.** Existing standpipes may be converted to sprinkler risers, provided that they are hydrostatically tested for two hours at not less than 50 psi (345 Pa) in excess of the maximum pressure to be maintained in the system.

**314.27.2.5 Supports.** Additional hangers, braces or other attachments for support of existing standpipes which have been converted in accordance with Section 314.27.2.4 shall be provided if they are necessary to meet the requirements of NFPA 13. The installation of additional flexible fittings in such risers is not required.

**314.27.2.6 Pipe material.** Any type pipe which has been listed by an approved testing agency for use in automatic sprinkler installations may be used when installed in accordance with its listing limitations.

**314.27.3 Permissible omissions.** The following features required in new high-rise buildings are not required in systems installed under the provisions of this section:

1. Redundant fire pump;
2. Secondary on-site supply of water;

3. More than one fire department connection;
4. Connection of the system to two risers on each floor. Hydraulic calculations may consider all risers in service;
5. In a Group R, Division 1 or R-2 Occupancy building, sprinklers in bathrooms and closets. See San Francisco Building Code Section 903.3.1.1.1 for additional permissible sprinkler omissions.

**314.27.4 Effective date.** The effective date of these requirements shall be January 01, 2008.

**314.27.5 Notification.** Not later than 60 days following the effective date of these requirements, the Building Official shall notify in writing by certified mail the owner of each building within the scope of this section. The notice shall contain a copy of this section, a commentary on it and a notice of intent form. The notice of intent shall be designed to elicit information regarding proposed water supply connections, pumps, risers and existing partial sprinkler systems. The notice of intent shall include a tentative schedule for phasing the installation of the complete sprinkler system.

**314.27.5.1 Deferred notice.** If a building within the scope of this section is not discovered by the Building Official until after the deadline for notification, the building owner shall be notified within 30 days of such discovery.

Failure to receive notification does not exempt a building owner from compliance with this section.

**314.27.6 Authority of Building Official.** The Building Official, in consultation with the San Francisco Fire Marshal, may approve modifications and alternate methods and materials when it is clearly evident that a reasonable degree of fire safety is provided. In such cases, the Building Official may:

1. Consider alternative protection based on nationally recognized standards, principles and tests, and generally recognized and well-established methods of fire protection;
2. Waive specific individual requirements if it can be shown that such requirements are not physically possible, require disproportionate effort or pose an undue hardship with little increase in life safety and that a practical alternate cannot be provided; and
3. Grant necessary extensions of time when it can be shown that the specific time periods are not physically practical or pose an undue hardship. The granting of an extension of time for compliance may be approved by the Building Official based on the showing of good cause and on approval of an acceptable, systematic, progressive plan of correction.

**314.27.7 Appeal of high-rise sprinkler requirements.** Application may be made to the Board of Examiners in accordance with San Francisco Building Code Section 105A.1 for approval of alternate methods, materials or types of construction or for variances from the provisions of this section.

**314.27.8 Implementation.** The requirements stated in Section 314.27.2 shall be accomplished by the following steps. Failure to complete any step within the required time frame is a violation of this code, and the Building Official shall have the power to abate the building in accordance with San Francisco Building Code Section 102A.

**314.27.8.1 Step 1. Notice of intent.** The owner shall submit a properly completed Department-provided notice of intent to the Building Official not later than three years after the effective date of this requirement.

**EXCEPTION:** No notice of intent is required if an approved sprinkler system is completed prior to the deadline above.

**314.27.8.2 Step 2. Water supply.** The owner shall install the system riser, including floor-control valves, and shall connect it to the approved automatic water supply not later than five years after the effective date of these requirements. For purposes of this section, an automatic water supply shall consist of a connection to the public water works system and, if required by hydraulic analysis, installation of a fire pump.

**314.27.8.3 Step 3. Piping and sprinklers.** The owner shall complete the sprinkler system, including required electrical monitoring, not later than 12 years after the effective date of these requirements.

**314.27.8.4 Installation.** The installation of all fire alarm equipment shall be in accordance with the San Francisco Electrical Code and the California Fire Code.

*324 Add the following section:*

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## **SECTION 324 – RESERVED**

*325 Add the following section:*

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## **SECTION 325 – RESERVED**

*326 Add the following section:*

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## **SECTION 326 – EXISTING BUILDINGS OR OTHER STRUCTURES LOCATED ON A MILITARY BASE SELECTED FOR CLOSURE**

**326.1 General.** As authorized by Assembly Bill 1644 California Military Base Reuse and Preservation Act of 2012, a building or other structure that is located on a military base selected for closure by action of the federal Defense Base Closure and Realignment Commission, including Naval Station Treasure Island (including Yerba Buena Island) and Hunters Point Naval Shipyard, may comply with the requirements of this code in a graduated manner over a period not to exceed three years, provided that:

1. The building or structure is in existence at the time the military base is selected for closure by action of the federal Defense Base Closure and Realignment Commission;
2. The building or structure will be safe for its intended use and occupancy;
3. The building or structure is under a lease from the federal government to either the City and County of San Francisco or the Redevelopment Agency of the City and County of San Francisco (the “Redevelopment Agency”);
4. The building or structure will be subleased by the City and County of San Francisco or Redevelopment Agency to either a private party, to the City and County of San Francisco or to the Redevelopment Agency; and
5. The building or structure meets the code compliance inspection and graduated compliance plan requirements set forth below.

**326.2 Presubleasing Code Compliance Inspections.** Before the City and County of San Francisco or the Redevelopment Agency enters into any sublease of a building or structure, the public entity proposing to enter into the sublease shall request the Building Official and the San Francisco Fire Marshal (the “Fire Marshal”) to inspect, or cause to be inspected, the building or structure for compliance with applicable codes, in accordance with the provisions of this Section 326. The Building Official and the Fire Marshal shall issue a written report containing their findings on the compliance of the building or structure to the agency proposing to enter into the sublease. The Building Official and the Fire Marshal may, in their discretion, issue the compliance report jointly or separately.

**326.2.1 Applicable codes.** The Building Official and the Fire Marshal shall evaluate the building or structure, including any alterations or changes in use if known, using the codes in effect at the time of original construction. If a determination of what codes were in effect at the time of original construction cannot be made, the Building Official and the Fire Marshal shall jointly determine which codes are appropriate for evaluation of the building or structure for the purposes herein.

**326.2.2 Notice to proposed subtenants.** The Redevelopment Agency or the City and County of San Francisco agency proposing to enter into a sublease shall notify the proposed subtenant of the final compliance inspection reports for such building or structure by (a) attaching a copy of the final reports of the Building Official and Fire Marshal to the sublease; or (b) providing a copy of such reports to the subtenant and referencing such delivery in the sublease.

**326.3 Graduated Code Compliance Plan and Timetable.**

**326.3.1 Buildings with no change in occupancy or use and no anticipated alterations.**

**326.3.1.1 Complying building or structure.** If, after performing the inspections required by Section 326.2, the Building Official and the Fire Marshal concur that the building or structure complies with the applicable codes and will not be hazardous to life safety, fire safety, health or sanitation based on its intended use and occupancy, the Building Official, with the approval of the Fire Marshal, will issue a Certificate of Final Completion and Occupancy.

**326.3.1.2 Remedial work required.** If, after performing the inspection required by Section 326.2, the Building Official and the Fire Marshal determine that remedial work is required so that the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation, such work must be performed pursuant to building permits issued by the Department. All such remedial work shall either comply with current codes or be approved by the Building Official and the Fire Marshal as providing equivalent public safety. The Building Official, with the approval of the Fire Marshal, shall determine that the building or structure is safe for occupancy as evidenced by the issuance of a Temporary Certificate of Occupancy or a Certificate of Final Completion and Occupancy. Such issuance shall not be a precondition to the execution of leases or subleases.

**326.3.1.3 Graduated compliance plan.** A graduated plan of compliance with the applicable codes may be approved upon the concurrence of the Building Official and the Fire Marshal, provided that:

1. The Building Official and the Fire Marshal have issued a written determination that, in their respective opinions, the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation. This determination may, in the discretion of the Building Official and the Fire Marshal, be issued jointly or separately;



2. The time for full compliance with the applicable codes does not exceed a period of three years from the date that the City and County of San Francisco or the Redevelopment Agency enters into a sublease;

3. All required remedial work either complies with current codes or is approved by the Building Official and the Fire Marshal as providing equivalent public safety; and

4. A Temporary Certificate of Occupancy is issued by the Building Official, with the approval of the Fire Marshal, setting forth the approved graduated compliance plan and a timetable for full compliance with the applicable codes. The compliance plan may be amended only with the joint approval of the Building Official and the Fire Marshal. In no event may the time allowed for full code compliance extend beyond the three-year period.

**326.3.2 Buildings with no change in occupancy or use but with planned alterations.**

**326.3.2.1 Complying building or structure.** If, after performing the inspection required by Section 326.2, the Building Official and the Fire Marshal concur that the building or structure meets current requirements for the new occupancy and will not be hazardous to life safety, fire safety, health or sanitation based on its intended use and occupancy, the Building Official, with the approval of the Fire Marshal, shall cause a Certificate of Final Completion and Occupancy to be issued.

**326.3.2.2 Remedial work required.** If, after performing the inspection required by 326.2, the Building Official and the Fire Marshal determine that remedial work is required so that the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation, such work must be done in conjunction with any planned alterations. A Temporary Certificate of Occupancy or a Certificate of Final Completion and Occupancy shall be issued by the Building Official, with the approval of the Fire Marshal. Such issuance shall not be a precondition to the execution of leases or subleases.

**326.3.2.3 Graduated compliance plan.** A graduated plan for compliance with the applicable codes may be approved with the concurrence of the Building Official and the Fire Marshal, provided that:

1. The Building Official and the Fire Marshal have issued a written determination that, in their respective opinions, the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation. This determination may, in the discretion of the Building Official and the Fire Marshal, be issued jointly or separately;

2. The time for full compliance with the applicable codes does not exceed a period of three years from the date that the City and County of San Francisco or Redevelopment Agency enters into a sublease;

3. All new work either complies with current codes or is approved by the Building Official and the Fire Marshal as providing equivalent public safety; and

4. A Temporary Certificate of Occupancy setting forth the approved graduated compliance plan with a timetable for full compliance with the applicable codes is issued by the Building Official, with the approval of the Fire Marshal. The compliance plan and timetable may be amended only with the joint approval of the Building Official and the Fire Marshal. In no event may the time allowed for full code compliance extend beyond the three-year period.

**326.3.3 Building with a change in occupancy or use but no anticipated alterations.**

**326.3.3.1 Complying building or structure.** If, after performing the inspection required by Section 326.2, the Building Official and the Fire Marshal concur that the building or structure meets current requirements for the new occupancy and will not be hazardous to life safety, fire safety, health or sanitation based on its intended use and occupancy, the Building Official, with

the approval of the Fire Marshal, shall cause a Certificate of Final Completion and Occupancy to be issued.

**326.3.3.2 Remedial work required.** If, after performing the inspection required by Section 326.2, the Building Official and the Fire Marshal determine that remedial work is required so that the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation, such work must be performed pursuant to building permits issued by the Department. All remedial work shall either comply with current codes or be approved by the Building Official and the Fire Marshal as providing equivalent public safety. The building or structure may not be occupied until the Building Official, with the approval of the Fire Marshal, has caused the issuance of a Certificate of Final Completion and Occupancy.

**326.3.3.3 Graduated compliance plan.** A graduated plan of compliance with the applicable codes may be approved with the concurrence of the Building Official and the Fire Marshal, provided that:

1. The Building Official and the Fire Marshal have issued a written determination that, in their respective opinions, the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation. This determination may, in the discretion of the Building Official and the Fire Marshal, be issued jointly or separately;
2. The time for full compliance with the applicable codes does not exceed a period of three years from the date that the City and County of San Francisco or the Redevelopment Agency enters into a lease;
3. All required remedial work either complies with current codes or is approved by the Building Official and the Fire Marshal as providing equivalent public safety; and
4. A Temporary Certificate of Occupancy is issued by the Building Official, with the approval of the Fire Marshal, setting forth the approved graduated compliance plan and a timetable for full compliance with the applicable codes. The compliance plan and timetable may be amended only with the joint approval of the Building Official and the Fire Marshal. In no event may the time allowed for full code compliance extend beyond the three-year period.

**326.3.4 Buildings with a change in occupancy or use and with planned alterations.**

**326.3.4.1 Complying building or structure.** If, after performing the inspection required by Section 326.2, the Building Official and the Fire Marshal concur that the building or structure meets current requirements for the new occupancy and will not be hazardous to life safety, fire safety, health or sanitation based on its intended use and occupancy, the Building Official shall cause, with the approval of the Fire Marshal, the issuance of a Certificate of Final Completion and Occupancy upon completion and approval of the planned alteration work.

**326.3.4.2 Remedial work required.** If, after performing the inspection required by Section 326.2, the Building Official and the Fire Marshal concur that remedial work is required so that the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation, that work must be done in conjunction with any planned alterations. The building or structure must meet current code requirements for the new occupancy. All remedial work must either comply with current codes or be approved by the Building Official and the Fire Marshal as providing equivalent public safety. The building or structure may not be occupied until the Building Official, with the approval of the Fire Marshal, has caused a Certificate of Final Completion and Occupancy to be issued.

**326.3.4.3 Graduated compliance plan.** A graduated plan of compliance with the applicable codes may be approved with the concurrence of the Building Official and the Fire Marshal, provided that:

1. The Building Official and the Fire Marshal have issued a written determination that, in their respective opinions, the intended use and occupancy of the building or structure will not be hazardous to life safety, fire safety, health or sanitation. This determination may be issued jointly or separately, in the discretion of the Building Official and the Fire Marshal;
2. The time for full compliance with the applicable codes does not exceed a period of three years from the date that the City and County of San Francisco or the Redevelopment Agency enters into a sublease;
3. All new work either complies with current codes or is approved by the Building Official and the Fire Marshal as providing equivalent public safety; and
4. A Temporary Certificate of Occupancy is issued by the Building Official, with the approval of the Fire Marshal, setting forth the approved graduated compliance plan and a timetable for full compliance with the applicable codes. The compliance plan and timetable may be amended only with the joint approval of the Building Official and the Fire Marshal. In no event may the time allowed for full code compliance extend beyond the three-year period.

**326.4 Enforcement.**

**326.4.1 Notices of violation and orders to abate.** The Department and the Fire Department shall provide to the Redevelopment Agency or City and County of San Francisco agency that has entered into a sublease a copy of any notice of violation or order to abate served upon a subtenant. The manner of service shall be as otherwise required by law.

**326.4.2 Revocation of certificate of final completion and occupancy.** In the event that the Building Official or Fire Marshal issues an order to abate code violations and the order is not complied with during the time provided therein, the Building Official may, in writing, revoke the Certificate of Final Completion and Occupancy.

**326.5 Fees.** The Department and the Fire Department may charge the Redevelopment Agency or other appropriate City and County of San Francisco agencies fees for actual time and materials expended in responding to requests for inspection and performing other tasks associated with the graduated compliance plan program. Fees for permits and other services shall be as set forth in the San Francisco Building Code and San Francisco Fire Code.

<i>327 Add the following section:</i>
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## **SECTION 327 – WORK PRACTICES FOR LEAD-BASED PAINT ON PRE-1979 BUILDINGS AND STEEL STRUCTURES**

**327.1 General.** Any buildings, structures, and properties on which the original construction was completed on or before December 31, 1978, or any steel structures to which lead-based paint disturbance or removal, including surface preparation, additions, alterations, repairs, or demolitions are made, shall comply with the requirements of this section.

**327.1.1 Purpose, intent and scope.**

**327.1.1.1 Purpose.** The purpose of this section is to ensure that any person undertaking activities that result in the disturbance or removal of interior or exterior lead-based paint on pre-1979 buildings, structures and properties and on steel structures uses work practices that minimize or eliminate the risk of lead contamination of the environment.

**327.1.1.2 Intent.** The intent of this section is to encourage safe work practices for activities resulting in the disturbance or removal of lead-based paint while providing a reasonable level of health and safety for the occupants and the public at large.

### **327.1.1.3 Scope.**

**327.1.1.3.1 Interior.** The requirements of this section apply to any activity resulting in the disturbance or removal of lead-based paint in the interior of pre-1979 buildings, structures and properties or portions thereof with one of the following occupancy classifications: Group E for Day Care and Group R, Divisions 1, 2 and 3. The requirements of this section with regard to the interior of a facility shall include, but are not limited to, residential-based family child-care facilities licensed by the State of California.

**327.1.1.3.2 Exterior.** The requirements of this section apply to any activity resulting in the disturbance or removal of lead-based paint on the exterior of any pre-1979 buildings, structures and properties and any steel structures.

**327.2 Definitions.** Except as otherwise specified herein, the terms used in this section shall have the same meanings as those set forth in San Francisco Building Code Chapter 2.

**ACCREDITED LABORATORY** means a laboratory that operates within the EPA National Lead Laboratory Accreditation Program.

**ADJACENT PROPERTIES** means properties that adjoin the regulated area, including but not limited to properties next to and at the corners of lot lines.

**CERTIFIED LEAD INSPECTOR/ASSESSOR** means any person licensed or certified by the California Department of Health Services (DHS), as authorized by the United States Environmental Protection Agency (EPA), in accordance with 40 CFR Part 745, subparts L or Q, to perform risk assessment and/or lead-based paint inspection.

**CLEARANCE INSPECTION** means an on-site limited investigation using visual observation and sampling techniques performed by an independent certified lead inspector/assessor to verify the absence of lead-based paint hazards, as specified in Title 17, California Code of Regulations, Division 1, Chapter 8: Accreditation, Certification and Work Practices for Lead-Based Paint and Lead Hazards. Any analytical testing of sample(s) collected during such inspection shall be performed by an accredited laboratory.

**COMMON AREA** means any interior part of a multi-unit residential building that is accessible to all occupants, including but not limited to: corridor, hallways, lobbies, laundry rooms, storage areas, stairways, porches and interior play areas.

**CONTAINMENT AND BARRIER SYSTEMS** refers to various measures that prevent the migration of work debris beyond the regulated area, and usually includes the use of disposable polyethylene plastic sheeting that is at least 6 mils thick (or two layers each 3 mils thick) to protect the ground, floor or other interior surfaces, and to seal off windows, doors and ventilation openings.

**CONTRACTOR** means any person, whether or not in possession of a valid State contractor's license, who undertakes to or offers to undertake to or purports to have the capacity to undertake to or submits a bid to, or does, by himself or herself or by or through others, any action that may or will disturb or remove lead-based paint. For purpose of this section, "contractor" shall also include subcontractors.

**DISTURB OR REMOVE LEAD-BASED PAINT** means any action that creates friction, pressure, heat or a chemical reaction upon any lead-based paint on an interior or exterior surface so as to abrade, loosen, penetrate, cut through or eliminate paint from that surface. This term shall include all demolition and surface preparation activities that are performed upon any surface containing lead-based paint.

**EXTERIOR** means the outside of a building or steel structure and the areas around it within the boundaries of the property, including without limitations the outside of any detached

structures, including but not limited to outside and common walls, stairways, fences, light wells, breezeways, sheds, and garages.

**HEPA** means a high efficiency particulate air filter.

**INTERIOR** means the inside of a building, including but not limited to the inside of any detached structures, interior common walls, common areas, and overhangs (projections).

**LEAD** means metallic lead and all inorganic compounds of lead.

**LEAD-BASED PAINT** or **LEAD PAINT** means (1) any paint, varnish, shellac, or other coating on surfaces with lead in excess of 1.0 mg/cm<sup>2</sup> (milligram per square centimeter) as measured by x-ray fluorescence (XRF) detector or laboratory analysis or in excess of 0.5 percent by weight, also expressed as 5,000 ppm (parts per million), 5,000 mg/g (micrograms per gram), or 5,000 mg/kg (milligrams per kilogram) as measured by laboratory analysis; or (2) any paint, varnish, shellac, or other coating found in the interior or on the exterior of pre-1979 buildings, structures, or properties or on the exterior of any steel structures, unless such paint, varnish, shellac or other coating is shown, by a lead-based paint testing, that it does not have the characteristics specified in (1).

**LEAD-BASED PAINT TESTING** means testing of surfaces, by laboratory analysis of bulk sample or measurement using x-ray fluorescence detector, to determine the presence of lead-based paint performed by an independent certified lead inspector/assessor. Where laboratory analysis is used as a method of testing bulk paint samples, the laboratory shall be an accredited laboratory.

**PERSON** shall have the same meaning as that defined in San Francisco Building Code Chapter 2 and shall also include any department, agency, or commission of the City and County of San Francisco, and State or federal agencies and departments to the extent allowable by law.

**PRE-1979 BUILDING** means any building whose original construction was completed on or before December 31, 1978.

**PROHIBITED PRACTICES** means any work practice that disturbs or removes lead-based paint using any of the following methods: (1) open flame burning or torching; (2) heat guns without containment and barrier systems, or operating above 1,100 degrees Fahrenheit (611.1 degrees Celsius) or causing the charring of paint; (3) hydroblasting or high-pressure washing without containment and barrier systems; (4) dry manual sanding or scraping, or machine sanding or grinding, or abrasive blasting or sandblasting without containment and barrier systems or a HEPA vacuum local exhaust tool.

**REGULATED AREA** means an area in the interior of any pre-1979 buildings, structures or properties with one of the following occupancy classifications: Group E for Day Care and Group R, Divisions 1, 2 and 3; or on the exterior of any pre-1979 buildings or any steel structures, in which work is being performed that disturbs or removes lead-based paint, and to which access is restricted in order to prevent migration of work debris. "Regulated area" shall also include any area contaminated with work debris as a result of a breach or lack of containment and barrier system, which constitutes a violation of the requirement set forth in Section 327.4.2.

**RESPONSIBLE PARTY** means either (1) the owner of the property where the owner or the owner's employees or persons otherwise under the control of the owner are performing the activities regulated under this section; or (2) the owner and the contractor where the owner has entered into a contract with another to carry out the activities regulated under this section.

**STEEL STRUCTURE** means any structure that is not a building and which has exterior surfaces made of steel or other metal, such as bridges, billboards, walkways, water towers, steel tanks and roadway or railway overpasses.

**WORK DEBRIS** means any debris, including without limitations paint chips and dust, resulting from any activity that disturbs or removes lead-based paint.

**327.3 General Prohibitions.** No person shall disturb or remove lead-based paint through the use of prohibited practices, or in any other way that generates work debris during demolition or work on the interior of Occupancy Group E for Day Care and Group R, Divisions 1, 2 and 3 or exterior of any pre-1979 buildings or any steel structure except in accordance with the requirements of this section.

For purposes of this section, all paint on the exterior of any pre-1979 building or any steel structure shall be presumed to be lead-based paint. Any person seeking to rebut this presumption shall establish through lead-based paint testing, or other means satisfactory to the Director, that the paint on the building or steel structure in question is not lead-based paint.

**Exemption:** Work that disturbs or removes lead-based paint from the interior of an owner-occupied pre-1979 dwelling unit shall be exempted from the requirements for demolition or work on the interior of Occupancy Group R, Divisions 1, 2 and 3, provided that such unit is not a licensed childcare facility. Notwithstanding this exemption, the responsible parties shall take all reasonable measures to prevent the migration of work debris from the interior of the owner-occupied dwelling unit to the outside of such unit which includes, without limitations, any interior common areas and the exterior of the building, during the course of any work that disturbs or removes lead-based paint.

#### **327.4 Performance Standards.**

**327.4.1 Restrict access.** Any person performing work subject to this section shall restrict access by third parties to the regulated area, except as authorized by this section or until the regulated area is cleaned in accordance with Section 327.4.4. This subsection shall not apply to regulated areas that are required for access or egress during the course of the work, such as common areas, and where no alternative exists for access or egress, in which case dust generation and migration shall be controlled through the use of HEPA-attached tools or other feasible containment and barrier systems that allow for access or egress.

**327.4.2 Containment and barrier systems.** Any person performing work subject to this section shall establish containment and barrier systems that contains the work debris within the regulated area.

**327.4.2.1 Protect ground.** Any person performing exterior work subject to this section shall, to the maximum extent possible, protect the ground from contamination by work debris by laying 6 mil plastic (or two layers each 3 mil thick) on the ground extending at least 10 feet (3048 mm) from the work surface when possible.

**327.4.2.2 Protect floor and furnishings.** Any person performing interior work subject to this section shall protect with the use of 6 mil plastic (or two layers each 3 mil thick) any floors and other interior horizontal surfaces, carpets, rugs, drapes, curtains, blinds, shades and furniture in the regulated areas from work debris when it is impracticable to remove such items from the regulated areas during the course of the work.

**327.4.3 Prevent migration.** Any person performing work subject to this section shall make all reasonable efforts to prevent the migration of work debris beyond the established containment and barrier systems during the course of the work. Such efforts may include, but are not limited to, providing secure 6 mil plastic (or two layers each 3 mil thick) protective covering, bagging, shrouding, and/or other safe containment and barrier systems to prevent the migration of work debris; covering and sealing any windows, vent openings and doors in the regulated area to

prevent migration; and instituting measures to prevent the tracking of dust from the regulated areas.

**327.4.4 Clean up standards.** At the completion of any work that disturbs or removes lead-based paint or when access to the regulated areas are required by State law or local ordinance during the course of such work, the responsible party shall:

**327.4.4.1** For interior work, make all efforts to remove all visible work debris from the regulated areas. Such efforts shall include but are not limited to wet clean with detergent any exposed interior horizontal hard surfaces in the regulated areas and HEPA vacuum the regulated areas.

**327.4.4.2** For exterior work, make all efforts to remove all visible work debris from the regulated areas.

**327.5 Notification Requirements.**

~~**327.5.1 Notification to the Director.** Except as otherwise authorized by this section, prior to the commencement of exterior work subject to this section, the owner or contractor shall provide written notice to the Director, either in person, by U.S. mail or by fax, of the following:~~

~~**327.5.1.1** The address and location of the project;~~

~~**327.5.1.2** The scope of work, including the specific location of the work to be performed;~~

~~**327.5.1.3** The methods and tools for paint disturbance and/or removal;~~

~~**327.5.1.4** The approximate age of the building or steel structure;~~

~~**327.5.1.5** The anticipated job start and completion dates for work subject to this section;~~

~~**327.5.1.6** Whether the building is residential or non-residential, and whether it is owner-occupied or rental property;~~

~~**327.5.1.7** The dates by which the responsible party has or will fulfill any residential occupant or adjacent property notification requirements as described in Sections 327.5.4, 327.5.5 and 327.5.6 below; and~~

~~**327.5.1.8** The name, address, telephone number and, if available, pager number of the party who will perform the specified work.~~

~~**327.5.1.9** The Director shall make available to the public a form containing blank spaces for the information required by Sections 327.5.1.1 to 327.5.1.8, inclusive.~~

~~**327.5.1.10** In lieu of the submission of the form set forth in Section 327.5.1.9, the owner or contractor may submit the Lead Work Pre-Job Notification form required by the California Division of Occupational Health and Safety pursuant to Section 1532.1 of Title 8 of the California Code of Regulations.~~

~~**327.5.2 De minimis exemption.** Any person performing exterior work that disturbs or removes less than 100 square feet or 100 linear feet of lead-based paint in total shall be exempted from the requirements of Section 327.5.1.~~

~~**327.5.3 Sunset.** Unless extended by the Board of Supervisors, the requirements of Section 327.5.1 shall terminate two years from this effective date of this subparagraph.~~

~~**327.5.4 327.5.1 Post sign.** Not later than the commencement of work subject to this section, the owner or, where the owner has entered into a contract with a contractor to perform work subject to this section, the contractor shall post signs in a location or locations clearly visible at the access points to interior regulated areas, such as at the entrances of the affected residential unit(s) or common areas, and in the case of exterior work, shall post signs in a location or locations clearly visible to adjacent properties stating the following:~~

~~LEAD WORK IN PROGRESS~~

~~PUBLIC ACCESS TO REGULATED AREA PROHIBITED~~

POSTED IN ACCORDANCE WITH SF EXISTING BUILDING CODE SECTION ~~327.5.4~~  
327.5.1

~~327.5.5~~ **327.5.2 Requirements for sign.** The sign required by Section ~~327.5.4~~ 327.5.1 shall be not less than 24 inches (609.6 mm) square and shall be in large boldface capital letters no less than ½ inch (12.7 mm) in size. The Director shall make available to the public a sign that complies with these requirements and states the required information in English, Chinese and Spanish. The sign required by this section shall remain in place until the work subject to this section has been completed. Where it is not possible to post signs in a conspicuous location or locations clearly visible at the access points to interior regulated areas, such as at the entrances of the affected residential unit(s) or common areas, and in the case of exterior work, in a location or locations clearly visible to the adjacent properties, the owner or, where the owner has entered into a contract with a contractor to perform work subject to this section, the contractor shall provide the notice in written form, such as a letter or memorandum, to the occupants of adjacent properties.

~~327.5.6~~ **327.5.3 Notice to residential occupants.** Except as may be otherwise inconsistent with state law, where work subject to the requirements of this section is to be performed on a residential property or structure regulated by this section and occupied by one or more residential occupants, not less than three business days before work subject to this section is to commence, the owner shall provide the following information:

~~327.5.6.1~~ **327.5.3.1** The notice shall be in the form of a sign, letter or memorandum and shall prominently state the following:

Work is scheduled to be performed beginning [date] on this property that may disturb or remove lead-based paint. The persons performing this work are required to follow State and local laws regulating work with lead-based paint. You may obtain information regarding State laws by calling the California Department of Health Services. You may obtain information regarding local laws, or report any suspected violations of these requirements, by calling the San Francisco Department of Building Inspection. In addition, you may obtain information regarding your rights as a tenant under the San Francisco Administrative Code, by calling the San Francisco Rent Stabilization Board. Finally, the owner of this property is required to provide residential occupants with a copy of the U.S. Environmental Protection Agency pamphlet titled “Protect Your Family From Lead-Based Paint in Your Home,” unless the owner has previously provided this pamphlet to residential occupants.

The Director shall make available to the public a form that states the required information in English, Chinese and Spanish.

~~327.5.7~~ **327.5.4 Early commencement of work.** An owner may commence, or may authorize a contractor to commence, work subject to this section less than three business days after providing notices required in Sections ~~327.5.6~~ 327.5.3 above when the owner determines that such work must be commenced immediately in order to correct life-safety hazards.

~~327.5.8~~ **327.5.5 Early commencement of work requested by residential occupant.** Upon written request of residential occupant, an owner may commence, or authorize a contractor to commence, work subject to this section less than three business days after providing notices required in Section ~~327.5.6~~ 327.5.3.

~~327.6~~ ~~Inspection and Sampling.~~ **327.6 Inspection and Sampling.**

**327.6.1 Authority to inspect.** The Director is authorized to inspect the interior or exterior of any building or steel structure upon which work subject to the requirements of this section is being performed for the purpose of determining whether the work is being carried out in accordance



with the requirements of this section. This inspection authority shall be exercised in accordance with San Francisco Building Code Section 104A.2.3.

**327.6.2 Response to complaint.** Upon receiving a complaint, the Director shall (1) review the complaint; ~~(2) determine whether a valid notification form has been filed with the Director for the property in compliance with the requirements of Section 327.5.1;~~ and ~~(2)~~ ~~(3)~~ where deemed necessary by the Director, conduct an inspection at the job site within two business days to determine the validity of the complaint.

**327.6.3 Evaluation of complaint.** When determining the validity of a complaint, if the Director is not able to observe the actual performance of any work practices constituting violations of Sections 327.3, 327.4 and/or 327.5, the Director shall investigate and consider the following:

**327.6.3.1** The containment and barrier systems, work measures and work tools being used by the responsible party;

**327.6.3.2** The color(s) of paint being disturbed or removed by the responsible party;

**327.6.3.3** The color(s), quantities, nature and locations of work debris;

**327.6.3.4** The color(s), locations and conditions of paint on buildings or steel structures adjacent to the regulated area, including without limitations adjacent properties, to determine if such paint could be a source of the work debris;

**327.6.3.5** Any work being performed on adjacent properties which could be a source of the work debris; and

**327.6.3.6** A record of clearance inspection of the regulated area performed after the completion of the work regulated under this section or records of any lead-based paint testing performed for the regulated area, if available; and

**327.6.3.7** Any other relevant evidence that the Director determines in the exercise of his or her discretion would help to determine whether a violation of this section has occurred.

**327.6.4 Authority of Director.** The Director or the Director of the Department of Public Health may also collect paint, dust and soil samples from the property where the work is being performed and from adjacent properties in order to determine the validity of a complaint. The Director shall have the authority to order a clearance inspection of the regulated area if he or she determines that there has been a violation of the requirements of Section 327.3 or 327.4.

**327.7 Enforcement.** In addition to the enforcement authorities granted to the Director by San Francisco Building Code Chapter 1, whenever the Director determines that a violation of the provisions of this section has occurred, the Director may assess an administrative penalty against the responsible parties pursuant to Section 327.8. The notice of penalty shall be served on the party against whom the penalty is being assessed. The notice of penalty shall be final and shall be adopted by the Director as a Director's Order if the responsible party fails to appeal the notice of penalty as provided for in Subsection 327.8.

**327.8 Penalties.**

**327.8.1** In addition to any other penalties authorized by law, the Director may impose administrative penalties for violations of this section. Such penalty shall not exceed \$500 per violation per day. In addition to the administrative penalties assessed pursuant to this section, the Director may assess additional fees to cover the reasonable costs incurred in enforcing the administrative penalties. Penalties and fees assessed shall continue to accrue against the responsible party or parties until the violation of this section is abated or otherwise remedied in the judgment of the Director. Each day in which the violation continues unabated constitutes a separate and distinct violation.

**327.8.1.1 Use of penalty.** Any administrative penalty and fee received by the Treasurer of the City and County of San Francisco shall be placed in the Building Inspection Fund and used to offset the Department's costs in connection with the administration and enforcement of this section.

**327.8.2 Appeal penalty.** A responsible party may appeal the imposition of the administrative penalty by requesting, in writing, a Director's hearing. Such appeal shall be made within 15 business days from the issuance of the notice of penalty and shall specify grounds for appealing the imposition of the administrative penalty. Upon a timely request for a Director's hearing, the Director shall conduct an administrative hearing in accordance with Section 327.9.

**327.8.2.1 Alternative penalty.** The Director, in his or her discretion, may allow a responsible party found to be in violation of this section to attend a training course approved by the State of California Department of Health Services in lead-related construction supervision and project monitoring in lieu of paying an administrative penalty pursuant to Section 327.8.1 in which case the penalty is stayed until such time that the responsible party provides proof of satisfactory completion of the course. The Director shall require proof of attendance and satisfactory completion of the course, including certification from the instructor or provider of the course before dismissing the penalty assessed against the person. Failure to provide such proof when requested by the Director shall result in the reinstatement of the assessed penalty against the responsible party.

**327.8.2.1.1 Applicability.** The alternative penalty set forth in Section 327.8.2.1 shall only be available to persons who have not previously completed such a training course and who have not been previously found by the Director to be in violation of this section.

### **327.9 Administrative Enforcement Procedures.**

**327.9.1 Action by the Director.** If the responsible parties failed to comply with the notice of violation, Stop Work Order and/or notice of penalty issued pursuant to this code, the Director may:

**327.9.1.1** Refer the matter for a hearing in accordance to the provision of this subsection; or

**327.9.1.2** Issue another notice of violation, Stop Work Order, and/or notice of penalty, if appropriate; or

**327.9.1.3** In the case where the responsible party is a contractor, file a complaint with the State Contractor Licensing Board.

**327.9.2 Notice of hearing.** Notice of any hearing conducted under this section shall be given in accordance with San Francisco Building Code Chapter 1.

**327.9.3 Hearing.** Any hearing held pursuant to this section shall be conducted in accordance with San Francisco Building Code Chapter 1.

**327.9.4 Decision.** Except as otherwise provided for in this subsection, any decision issued pursuant to this subsection shall be issued in accordance with San Francisco Building Code Chapter 1A.

**327.9.4.1** Where the order imposes administrative penalties, the order shall apprise the responsible parties of their rights to seek judicial review in the Superior Court of San Francisco pursuant to Section 1094.6 of the California Code of Civil Procedure.

**327.9.5 Posting and service of order.** The Director's order shall be posted and served in accordance with San Francisco Building Code Chapter 1A.

**327.9.6 Appeal of order.** Any person may appeal the Director's order issued pursuant to Section 327.9.4, provided that such appeal is in writing and filed with the Abatement Appeals Board pursuant to San Francisco Building Code Chapter 1A. Upon the determination of the Clerk of the

Abatement Appeals Board that all requirements to make an appeal have been met, the monetary portion of the Director's order shall be stayed pending the appeal.

**327.9.6.1** A responsible party against whom administrative penalties are imposed may seek judicial review of the monetary portion of the order by filing a writ of mandate with the Superior Court of San Francisco pursuant to Section 1094.6 of the California Code of Civil Procedure.

**327.9.7 Referral to the City Attorney's Office.** If the responsible parties fail to comply with a final and non-appealable order, the Director may refer the order to the City Attorney's Office for civil prosecution. In any action brought by the City Attorney's Office to enforce a final and nonappealable order, the responsible party shall be liable for all costs and fees including, but are not limited, to attorneys fees incurred by the City.

**327.10 Miscellaneous.**

**327.10.1 Method of service.** Unless otherwise specified, any notices and orders issued pursuant to this section shall be served in accordance with San Francisco Building Code Chapter 1A.

**327.10.2 Proof of service.** The person serving the notice or order as provided herein shall file an affidavit or declaration thereof under the penalty of perjury, certifying the time and manner in which such notice was given. Such person shall also file therewith any receipt card of such notice or order if service was performed by certified mail.

~~327.11 Remedies and Enforcement by City Officials.~~ **327.11 Remedies and Enforcement by City Officials.**

**327.11.1 No obligation by City.** In undertaking the enforcement of this section, the City and County of San Francisco is assuming an undertaking only to promote the general welfare. It is not assuming, nor is it imposing on its officers and employees, an obligation for breach of which it is liable in money damages to any person who claims that such breach proximately caused injury.

**327.11.2 Discretionary duty.** Subject to the limitations of due process, notwithstanding any other provision of this section, whenever the words "shall" or "must" are used in establishing a responsibility or duty of the City, its elected or appointed officers, employees or agents, it is the legislative intent that such words establish a discretionary responsibility or duty requiring the exercise of judgment and discretion.

**327.12 Severability.** If any section, paragraph, sentence, clause or phrase of this section is for any reason held to be unconstitutional, invalid or ineffective by any court of competent jurisdiction, such decision shall not affect the validity or effectiveness of the remaining portions of this section. The Board of Supervisors declares that it would have passed each section, paragraph, sentence, clause or phrase of this section irrespective of the fact that any portion of this section could be declared unconstitutional, invalid or ineffective.

*328 Add the following section:*

## **SECTION 328 – ASBESTOS INFORMATION AND NOTICE**

**328.1 Definitions.** For the purpose of this chapter the following definitions shall apply:

**ASBESTOS** means naturally occurring fibrous hydrated mineral silicates, chrysotile, crocidolite, amosite, fibrous tremolite, fibrous anthophyllite and fibrous actinolite.

**ASBESTOS-CONTAINING CONSTRUCTION MATERIAL** means any manufactured construction material, including structural, mechanical and building material, which contains more than one percent asbestos by weight.

**ASBESTOS-RELATED WORK** means any activity which by disturbing asbestos-containing construction materials may release asbestos fibers into the air and which is not related to its manufacture, the mining or excavation of asbestos-bearing ore or materials, or the installation or repair of automotive materials containing asbestos.

**MISCELLANEOUS MATERIAL** means interior building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation.

**NONRESIDENTIAL BUILDING** means any building as defined in this code except:

1. A building which is used exclusively as a single-dwelling unit or multiple-dwelling units and is not occupied as a mixed residential-commercial use;
2. A building owned or operated by the state or federal government and exempt from the building permit requirements under San Francisco Building Code Section 106A.2;
3. A school building as defined in 15 U.S.C. 2642.

**SURFACING MATERIAL** means material in a building that is sprayed-on, troweled-on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members or other materials on surfaces for acoustical, fireproofing or other purposes.

**THERMAL SYSTEM INSULATION** means material in a building applied to pipes, fittings, boilers, breeching, tanks, ducts or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

**TRANSFER OF TITLE** means the conveyance of title to real property by one or more persons as a result of sale or exchange, and including the execution of a real property sales contract as defined in Section 2985 of the California Civil Code and any change in ownership described in subdivisions (c) and (h) of Section 61 and subdivision (c) of Section 64 of the California Revenue and Taxation Code, with the following exceptions:

1. Transfers pursuant to court order, including, but not limited to, transfers ordered by a probate court in administration of an estate, transfers pursuant to a writ of execution, transfers by a trustee in bankruptcy, transfers by eminent domain or transfers resulting from a decree for specific performance;
2. Transfers to a mortgage by a mortgagor in default, transfers to a beneficiary of a deed of trust by a trustor in default, transfers by any foreclosure sale after default in an obligation secured by a mortgage, or transfer by a sale under a power of sale after a default in an obligation secured by a deed of trust or secured by any other instrument containing a power of sale;
3. Transfers by a fiduciary in the course of the administration of a guardianship, conservatorship or trust;
4. Transfers from one co-owner to one or more co-owners;
5. Transfers made to a spouse, or to a person or persons in the linear line of consanguinity of one or more of the transferors;
6. Transfers between spouses resulting from a decree of dissolution of a marriage or a decree of legal separation or from a property settlement agreement incidental to such decrees;
7. Transfers by the State Controller in the course of administering the Unclaimed Property Law, Chapter 7 (commencing with Section 1500) of Title 10 of Part 3 of the Code of Civil Procedure;
8. Transfers under the provisions of Chapter 7 (commencing with Section 3691) and Chapter 8 (commencing with Section 3771) of Part 6 of Division 1 of the Revenue and Taxation Code;
9. Transfers resulting by operation of law;

10. Transfers by which title to real property is reconveyed pursuant to a deed of trust.

**328.2 Asbestos Information Notice.**

**328.2.1 Nonresidential disclosure.** The seller of any nonresidential building, except a nonresidential building for which a building permit to erect the structure was filed with the Department on or after January 1, 1979, shall disclose to the buyer, prior to transfer of title, what efforts, if any, the seller has made to determine if the building contains asbestos-containing construction materials and provide relevant documentation of these efforts.

**328.2.2 Knowledge of seller.** The seller of any non-residential building, except a nonresidential building for which a building permit to erect the structure was filed with the Department on or after January 1, 1979, who knows that the nonresidential building contains asbestos-containing construction materials, shall provide notice to the buyer prior to transfer of title of the following:

1. The existence of, conclusions from and a description or list of the contents of any survey conducted to determine the existence and location of asbestos-containing construction materials within the nonresidential building. The seller shall provide copies of any documentation of the final survey results, including any documentation of the inspector's, laboratory's or consultant's asbestos inspection qualifications and state certification.

2. Locations within the nonresidential building identified by the survey or known to the seller where asbestos-containing construction materials in the form of surfacing material, thermal system insulation or miscellaneous material are present.

3. Any final operation and management plans prepared for the seller by consultants, agents or employees of the seller identifying procedures or handling restrictions to minimize or prevent disturbance, release or exposure to the asbestos-containing construction material.

4. Results of any bulk sample analysis or air monitoring conducted for or by the seller or within the seller's control, including reference to sampling and laboratory procedures utilized, and copies of the laboratory reports, monitoring data and sampling procedures.

5. Information in a final survey or other document prepared for the seller by consultants, agents or employees of the seller that (a) assesses the condition of asbestos-containing construction material in the form of surfacing material, thermal system insulation or miscellaneous material; or (b) evaluates the potential for exposure to building occupants.

**328.3 Asbestos-Related Work Sign Posting and Affidavits.** In addition to any other requirements for notice set forth in this code, any person filing an application for a building permit to perform work in an apartment house or a residential hotel [as defined in Section 41.4 of the San Francisco Administrative Code], which work includes asbestos-related work as defined in this code, shall comply with the following requirements:

**328.3.1 Sign posting.** Prior to commencement and for the duration of any asbestos-related work, post a sign readable at 20 feet (6.096 m) at each noncontiguous location where any asbestos-related work is performed in the apartment house or residential hotel, or in any appurtenant buildings thereto and facilities supplied in connection with the use or occupancy thereof, including garage and parking facilities, stating "Danger - Asbestos. Cancer and Lung Hazard. Keep Out." Notwithstanding this requirement, if an owner or contractor of the owner subject to the requirements of California Labor Code Sections 6501.5 *et seq.*, and regulations promulgated pursuant thereto, is in compliance with the requirements for posting locations of asbestos-related work, such owner or contractor shall be deemed to have complied with this requirement.

**328.3.2 Time of posting.** Unless the requirement for plans and specifications is waived by the Director of the Department pursuant to San Francisco Building Code Section 106A.3.2, provide a notice at least 72 hours prior to commencement of any asbestos-related work to the residential

tenants in the building. The notice shall advise the residential tenants of the nature of the asbestos-related work to be performed, the date and time the work is scheduled to commence, the specific location or locations in the building where the work will occur, the name and address of the person or firm performing the work and the name and telephone number of a person to contact on site if the residential tenant has questions or concerns. The notice shall be provided in one of the following ways:

1. At least 72 hours prior to commencement and for the duration of any asbestos-related work, post a notice containing the required information in a conspicuous common area of the apartment house or residential hotel measuring 15 inches by 15 inches (381 mm x 381 mm); or
2. Mail, by first-class registered mail, a notice containing the required information to each person who rents or leases residential space in the apartment house or residential hotel, postmarked at least five days plus 72 hours prior to commencement of any asbestos-related work; or
3. Personally deliver a notice containing the required information to each person who rents or leases residential space in the apartment house or residential hotel, at least 72 hours prior to commencement of the asbestos-related work.

**328.3.2.1 Affidavits.** The applicant shall thereafter submit an affidavit signed under penalty of perjury stating that the notice has been posted in the building or mailed or personally delivered to each person who rents or leases residential space in the building. See San Francisco Building Code Chapter 1A-L Fee Table for Affidavit Record Maintenance, for fee to defray the cost of maintaining records of said affidavits. If there is reason to believe that the notice was not posted, mailed or personally delivered as required, the Director shall investigate the matter, shall provide the applicant an opportunity to respond to any complaint of noncompliance, shall determine whether the requirements of this section have been substantially met and shall revoke the permit if it is determined they have not been substantially met.

**328.3.3 Apartment house and residential hotel exclusions.** Notwithstanding the definitions of apartment house or residential hotel [as defined in Section 41.4 of the San Francisco Administrative Code], those terms shall not include:

1. Any “school building” as defined in 15 U.S.C. Section 2642 as that section read on January 1, 1989;
2. Any “building” as defined in California Health and Safety Code Section 25920, as that section read on September 27, 1989; or
3. The residential area of any multi-use building where the asbestos-related work is to occur solely in a commercial area, the commercial and residential areas of the building do not share supply air or return air handling systems, and the commercial area does not contain facilities supplied in connection with the use or occupancy of the residential area.

**NOTE:** Contact Bay Area Air Quality Management District for pre-permit requirements for demolition and alteration work and other requirements for asbestos related work.

*329 Add the following section:*

## **SECTION 329 – EARTHQUAKE EVALUATION OF PRIVATE SCHOOL STRUCTURES**

**329.1 General.** Every building classified as an Educational Group E occupancy under San Francisco Building Code Section 305 of this code that is not under the jurisdiction of the

Division of State Architect's Structural Safety section, and all non-building structures accessory to such buildings, shall be evaluated in accordance with the provisions of this Section 329. All evaluations required by Section 329 shall be conducted under the supervision of a licensed structural engineer.

***EXCEPTIONS:***

1. Evaluation is not required for buildings occupied by 25 or more persons for less than 12 hours per week or four hours in any given day.
2. Evaluation is not required for schools with an enrollment of 25 or fewer students.
3. Evaluation is not required for buildings not classified as Group E occupancy such as churches, places of religious worship, accessory residential buildings or similar non-educational uses.

**329.1.1 Retroactivity.** The requirements of Section 329 are retroactive and shall apply to all buildings and non-building structures within the scope of Section 329 that are in existence as of October 31, 2014 regardless of the date of construction.

**329.2 Scope and Criteria.** Each building and non-building structure shall be evaluated using ASCE 41-13 with the evaluation objective of Structural Life Safety with the BSE-1E hazard and Nonstructural Life Safety with the BSE-1E hazard as modified by an Administrative Bulletin to be adopted by the Department. An Evaluation required by Section 329 shall not in itself trigger any additional non-earthquake related work.

**329.3 Evaluation Scope Submittal.** No later than October 31, 2015, the building owner or the owner's authorized agent shall submit to the Department an Evaluation Scope document listing each structure to be evaluated, the evaluation objective to be applied, and other information requested by the Department.

**329.4 Evaluation Report Submittal.** No later than October 31, 2017, the building owner or the owner's authorized agent shall submit an Evaluation Report to the Department. The Evaluation Report shall conform to content and format requirements provided in the Administrative Bulletin adopted by the Department pursuant to Section 329.6.

**329.5 Voluntary Minimum Life-Safety Retrofit.** Any building or non-building structure subject to this Section, for which voluntary seismic retrofit is performed that meets or exceeds the criteria of ASCE 41-13, S-3 and N-C with the BSE-1E hazard, shall be exempt from any local mandatory seismic retrofit requirements until November 1, 2034. Such a building or non-building structure shall not be exempt from requirements associated with any addition, alteration, repair, change of occupancy, relocation, or other work regulated by this Code.

**329.6 Administrative Bulletin.** The Department shall prepare an Administrative Bulletin detailing the procedural implementation requirements for this Section 329.

**329.7 Enforcement.** Buildings and non-building structures in violation of this Section 329 may be considered to be unsafe. The Department may apply the provisions of San Francisco Building Code Section 102A, including 102A.13, Repair and Demolition Fund, in remedying such unsafe conditions. Enforcement action may be initiated by the Department for failure to comply with any of the requirements of Section 329, including failure to submit an Evaluation Scope document or Evaluation Report within the time designated by Sections 329.3 and 329.4.

**329.8 Fees.** Fees based on standard hourly rates in accordance with the SFBC Table 1A-D – Standard Hourly Rates shall be charged to compensate the Department for review and for related evaluation processing.

## Chapter 4 REPAIRS

*405.2 Revise this section as follows:*

**405.2 Repairs to damaged buildings.** Repairs to damaged buildings shall comply with this section. Unless otherwise approved by the Building Official, all structural damage shall be repaired. Repairs to buildings or structures which have sustained substantial structural damage to lateral force resisting elements shall comply with the minimum lateral force design requirements of Section ~~303.4~~ 304.4 or with the code under which the building or structure was designed, whichever is more restrictive.

Damage may be caused by events or a combination of events, including, but not limited to, fire, explosion, structural pest or wood-destroying organism attack, earthquake, wind storm, vehicular impact, ground subsidence or failure, or the collapse or dislodgement of any portion of any adjacent building or structure. The removal or alteration of structural elements as part of the work described in an approved building permit application shall not be considered to be “damage.”

*405.2.1.2 Add the following section:*

**405.2.1.2 Other damage.** For damage less than substantial structural damage that is not Disproportionate Earthquake Damage, repairs shall be allowed that restore the building to its predamage state, based on material properties and design strengths applicable at the time of original construction. New structural members and connections used for this repair shall comply with the detailing provisions of this code for new buildings of similar structure, purpose and location.

*405.2.2 Add the following as a second paragraph:*

**405.2.2 Disproportionate earthquake damage.**

Permit applications for required rehabilitation work shall be submitted to the Department within one year after the earthquake, and the work shall be completed as specified in Table B of San Francisco Building Code Section 106A.4.4.

*405.2.3.1 Revise this section as follows:*

**405.2.3.1 Evaluation.** The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the code official within 60 days of completion of the evaluation. The evaluation shall establish whether the damaged building, if repaired to its predamage state, would comply with the provisions of this code for wind and earthquake loads. Evaluation for earthquake loads shall be required if the substantial structural damage was caused by or related to earthquake effects or if the building is in Seismic Design Category C, D, E or F.

Wind loads for this evaluation shall be those prescribed in San Francisco Building Code Section 1609. Earthquake loads for this evaluation, if required, shall be according to section ~~303.4~~ 304.4.



## Chapter 5

# PRESCRIPTIVE COMPLIANCE METHOD

### SECTION 501 – GENERAL

*501.1.3 Add the following section:*

**501.1.3 Additions, alterations, or repairs to buildings, structures and property.** Buildings, structures and property to which additions, alterations or repairs are made shall comply with all the requirements of this code for new facilities, except as specifically provided in this section, in the San Francisco Housing Code, and in other applicable ordinances and regulations. See Section ~~501.4~~ 501.6 for provisions requiring installation of smoke detectors in existing Group R, Division 3 Occupancies.

*501.4 Add the following sections:*

**501.4 501.6 Additions, alterations, or repairs to Group R Occupancies.** When the valuation of an addition, alteration, or repair to a Group R Occupancy exceeds \$1,000 and a permit is required, or when one or more sleeping rooms are added or created in existing Group R Occupancies, smoke alarms shall be installed in accordance with San Francisco Building Code Section 907.

**EXCEPTION:** Repairs to the exterior surfaces of a Group R Occupancy are exempt from the requirements of this section.

*501.5 Add the following section:*

**501.5 501.7 Homeless Shelters.** Notwithstanding any other provision of this section, any addition, alteration, repair, installation, change or reconstruction of any building or structure, which is made in order to initiate, expand or continue a facility which, as approved by an authorized government agency, shelters otherwise homeless persons and which is operated by an organization exempt from federal income tax under Internal Revenue Code Sections 501(c)(3) or 501(d), shall meet only those requirements of this code which are determined by the Building Official, pursuant to rules and regulations adopted by the Building Official in accordance with San Francisco Building Code Section 104A.1, after consultation with the Fire Department, to be necessary or appropriate to prevent a life hazard, or to prevent the building or structure from being or becoming substandard. With respect to minimum lateral force requirements, said bulletin shall not waive any requirement which can be satisfied by work eligible to receive financial assistance from the State of California. Any provisions waived by said bulletin shall be applied when homeless shelter use ceases and may be applied when homeless shelter use is reduced.

*501.6 Add the following section:*

**501.6 501.8 Fire alarm systems.** For all buildings that are required to have a fire alarm system under this Code, the Fire Code, the Housing Code, or any other law, the building owner shall upgrade the fire alarm system, if necessary, to comply with the sound level requirement for sleeping areas set forth in Section 18.4.5.1 of NFPA 72, as amended from time to time, upon

either (a) completion of work under a building permit with a cost of construction of \$99,000 or more, (b) July 1, 2023, whichever occurs first.

**Exception.** Subsection ~~501.6(a)~~ 501.8(a) shall not apply to mandatory seismic strengthening alterations being performed pursuant to Chapter 5E of this Code, or to transient Hotels within the Residential Group R-1 Occupancy Classification of Section 310.2 of the Building Code.

*501.7 Add the following section:*

**501.7-501.9 Open, accessible attics.** When performing additions, alterations, or repairs in Group 3 R occupancies of six units or more under a building permit with a cost of construction of \$50,000 or more, fire blocks, draftstops, or fire safing insulation (approved noncombustible material used as a fire barrier) shall be installed in open attics of 30 inches in height or greater that are accessible from other than an occupied residential unit.

**Exception.** This requirement shall not apply to mandatory seismic strengthening alterations being performed pursuant to Chapter 5E of this Code.

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## SECTION 502 – ADDITIONS

*502.9-502.10 Add the following section:*

**502.9-10 High-rise buildings.** Any existing building or structure to which an addition is made which causes the building or structure to fall within the scope of San Francisco Building Code Section 403 shall comply with the provisions of that section.

*502.10-11 Add the following section:*

**502.10-11 Horizontal additions.** Horizontal additions shall meet the following requirements:

When the cumulative area of horizontal additions, excluding basement additions, exceeds 30 percent of the area of the original building or structure, excluding basements, and the additions are structurally interconnected to, or not separated to comply with ASCE 7-16 Section 12.12.3, the entire structure shall comply with Section ~~303.4~~ 304.4.

For the purpose of this Section ~~502.10-11~~, the term “original building or structure” shall mean the building or structure as it existed on the force based trigger date per IEBC. The combined building or structure may be used for more restrictive occupancy classifications as determined in San Francisco Building Code Chapter 3 only when the structure as a whole meets the requirements in this code for such occupancy.

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## SECTION 503 – ALTERATIONS

*503.1.1 Add the following section:*

**503.1.1 Stairways.** For stairway replacement, see San Francisco Building Code Section 1011.12.3.

*503.11 Revise this section as follows:*

**503.11 Substantial structural alteration.** Where work involves a substantial structural alteration, the lateral load-resisting system of the altered building shall satisfy the requirements of Sections 1609 and 1613 of the San Francisco Building Code. Reduced seismic forces shall be permitted.

**Exceptions:**

1. Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes that are altered based on the conventional light-frame construction methods of the San Francisco Building Code.
2. Where the intended alteration involves only the lowest story of a building and Section 506 does not apply, only the lateral load-resisting components in and below that story need comply with this section.

*503.11.1 Add the following section:*

**503.11.1 Non-structural alterations.** Whenever alteration work in a building or structure involves substantial changes to elements such as walls, partitions or ceilings, on 2/3 or more of the number of stories excluding basements, the building or structure as a whole shall comply with Section ~~303.4~~ 304.4. The term “substantial change” includes the addition, removal, repair or modification of such elements. All such work included in alteration permits issued within two years of the date of a permit application shall be included in the determination of whether the application is proposing substantial change to the building or structure.

Removal and replacement of interior gypboard or plaster in Type V (wood framed) R3 occupancy (one or two residential units) is not to be considered as “Substantial Change”.

The replacement gypboard must be 5/8" Type X with 5d cooler nails @ 4 inches on center or equivalent screws.

*503.47-19 Add the following section:*

**503.47-19 Mandatory Seismic Retrofit.** Submittal documents shall include plans indicating locations and construction of existing, new and modified building elements used to comply with Chapter 5E.

## **SECTION 506 – CHANGE OF OCCUPANCY**

*506.4.3 Revise this section as follows:*

**506.4.3 Seismic loads (seismic force-resisting system).** Where a change of occupancy results in a building being assigned to a higher risk category, or where the occupant load of the entire building or structure is increased by more than 10 percent and by more than 100 persons as compared to the occupant load of the existing legal use or the use for which the building was originally permitted, the building shall [~~←~~] comply with Section 303 ~~304.3.1~~ for the new risk category using full seismic forces.

**Exceptions:**

1. [~~←~~] Unreinforced masonry bearing wall buildings assigned to Risk Category III and to Seismic Design Category A or B, shall be permitted to use Appendix Chapter A1 of this code.

- 2. [~~←~~] When a change of occupancy or use involves only one story of a building or structure, only the lateral force resisting elements in that story and all lateral force resisting elements below need comply with reduced seismic forces in Section 303 ~~304.3.2~~.
- 3. [~~←~~] A change from a Group R, Division 3 to a Group R, Division 1 or Division 2 Occupancy caused by the construction of a third dwelling unit in the lowest story of a building or structure shall comply with reduced seismic forces in Section 303 ~~304.3.2~~ as provided in Exception 2 above.
- A building changing occupancy to an E occupancy, and is otherwise subject to Section 329, shall comply with Section 329.

*506.5.3 Add the following sections:*

**506.5.3.1 Increase in Occupant Load.** Where the occupant load of the entire building or structure is increased by more than 10 percent and by more than 100 persons as compared to the occupant load of the existing legal use or the use for which the building was originally permitted, the building shall comply with Section 304.3.2 for the reduced seismic forces.

**506.5.3.2 Group E.** A building changing occupancy to an E occupancy, and is otherwise subject to Section 329, shall comply with Section 329.

*508 Add the following section: Add the following sections:*

## **SECTION 508 – MOVED STRUCTURES**

**508.1 Conformance.** Structures moved into or within the jurisdiction shall comply with the provisions of the San Francisco Building Code for new structures.

**508.2 Removal of Debris.** Immediately after the building is moved and before it is occupied at the new site, the permittee must remove all debris and all walls and footings above grade at the site from which it has been moved, except where such walls provide support to adjacent buildings, structures or property. All excavated areas must be filled in or protected by substantial fences not less than 5 feet (1524 mm) in height.

*Add the following ~~Chapters~~ Chapter:*

### **Chapter 5B**

## **EARTHQUAKE HAZARD REDUCTION IN UNREINFORCED MASONRY BEARING WALL BUILDINGS**

(NOTE: The time limits for compliance with the provisions of Chapters 5B and 5C have passed, but the ordinance and the time limits therein are still in effect.)

### **SECTION 501B – PURPOSE**

The purpose of this chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of an earthquake on existing unreinforced masonry bearing wall buildings.

The provisions of this chapter are intended as minimum standards for structural seismic resistance for earthquake ground shaking and are established primarily to reduce the risk of life

loss or injury. Compliance with these provisions will not necessarily prevent loss of life or injury, or prevent earthquake damage to rehabilitated structures, or protect against the release of hazardous materials, or protect the function of essential facilities. These provisions are not intended to mitigate ground failure hazards such as liquefaction. The Community Safety Element of the General Plan of the City and County of San Francisco should be consulted for areas most susceptible to ground failure.

Time limits are given for owners of unreinforced masonry bearing wall buildings to submit an inventory of each building and an evaluation of the degree of risk presented by the building. Priorities and time limits are established for work to be completed.

Requirements for seismic strengthening of unreinforced buildings are contained in Chapter 5C.

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## **SECTION 502B – SCOPE**

The provisions of this chapter shall apply to all existing buildings having one or more bearing walls of unreinforced masonry as defined in Chapter 5C.

### ***EXCEPTIONS:***

1. Buildings housing Group R Occupancies containing less than five dwelling units or guest rooms and used solely for residential purposes.
2. Buildings accessory to and on the same lot as those described in Exception 1.
3. Buildings which have been brought into full compliance with the requirements of SFEB Section ~~303.4~~ 304.4 in effect on or after May 21, 1973.

Compliance with the provisions of Chapters 5B and 5C does not supersede the requirement for compliance with SFEB Section ~~303.4~~ 304.4 when otherwise required under SFEB.

A permit issued solely for compliance with any of the procedures of Chapters 5B and 5C of this code shall not be considered “substantial change” or “structural work” as defined in SFEB and compliance with SFEB Section ~~303.4~~ 304.4 will not be required.

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## **SECTION 503B – DEFINITIONS**

For the purpose of Chapters 5B and 5C, certain terms are defined as follows:

***BOLTS-PLUS*** is the installation of shear and tension anchors at the roof and floors and, when required, the bracing of the unreinforced masonry bearing walls upon evaluation of the height-to-thickness ratio of these walls.

***POOR SOIL*** is all soil lying bayward of the line indicating the landward limit of Bay Mud deposits as shown on the U.S. Geological Survey Map MF-1376, title “Map Showing the 200-foot thickness contour of surficial deposits and the landward limit of Bay Mud deposits of San Francisco, California,” by William B. Joyner, 1982.

***EXCEPTION:*** A building need not be considered as being located on poor soil when a subsurface exploration demonstrates that the soil is not underlain by Bay Mud.

***UNREINFORCED MASONRY BEARING WALL BUILDING*** is a building or structure having at least one unreinforced masonry bearing wall.

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## **SECTION 504B – COMPLIANCE REQUIREMENTS**

**504B.1 General.** The owner of each unreinforced masonry bearing wall building within the scope of this chapter and Chapter 5C shall cause a structural analysis to be made of the building by a registered civil or structural engineer or licensed architect, and, if the building does not meet the minimum standards specified in this code except as provided for in Chapters 5B and 5C, the

owner shall cause the building to be structurally altered to conform to such standards or cause the building to be demolished pursuant to the program implementation schedule set forth.

**504B.2 Program Implementation.** The requirements stated in Section 504B.1 above shall be accomplished by submitting to the Building Official the following:

**504B.2.1 Inventory form.** The owner is required to submit to the Department, within the time limits set forth in Table 5B-A, a properly completed inventory form, signed and sealed by the owner's civil or structural engineer or architect. See San Francisco Building Code Section 110A, Table 1A-S for the applicable fee for the review of the inventory form. A failure to respond within the time limits set forth in Table 5B-A is a violation of this code.

**504B.2.2 Risk assessment.**

**504B.2.2.1 General.** When filling out the required information on the inventory form, the owner's architect or civil or structural engineer shall assign to the building a relative level of risk depending upon the occupancy, soil conditions at the site and the density of the population exposed.

**504B.2.2.2 Level of risk assigned.**

1. Level 1 buildings are buildings containing Groups A Occupancies with an occupant load of 300 or more; or Group E Occupancies, and those buildings greater than three stories in height which are located on poor soil.

2. Level 2 buildings are all non-Level 1 buildings which are located on poor soil in the Downtown, North of Market/Civic Center, South of Market, South of Market Residential and Chinatown Unreinforced Masonry Building Study Areas as delineated on Figure 5B-1.

3. Level 3 buildings are buildings in the above areas which are not located on poor soil and buildings located on poor soil outside the above areas.

4. Level 4 buildings are all other unreinforced masonry bearing wall buildings.

**504B.2.3 Engineering reports.** The owner shall engage a registered civil or structural engineer or licensed architect to prepare an engineering report on the building when:

1. An owner desires to demolish a qualified historical building or any building containing a nonexempt Group R Occupancy rather than retrofit the building, and a report is requested by the Building Official or the Building Official of the Planning Department; or

2. The Bolts-plus level of strengthening is proposed; or

3. Strengthening to comply with the State Historical Building Code is proposed; or

4. The owner believes the building complies with Chapters 5B and 5C without any further alteration.

The engineering report shall detail applicable retrofit requirements of the least restrictive retrofit procedure for which the building qualifies. The required retrofit measures shall be developed schematically, and a conceptual construction cost estimate shall be included. If the Bolts-plus level of strengthening defined above and described in Exception 1 to Section 509C.2 is proposed, the necessary measures for compliance with the Special Procedure of Section 511C shall also be designated, and a second cost estimate for this option shall also be included in the report. If the engineering report demonstrates that no deficiencies exist, and the report is approved by the Department, the structure will be considered to conform to the requirements of this chapter. Except as noted in 1. above, the report shall be submitted not later than the date when the application for the building permit to either strengthen or demolish the building would otherwise be required. The format and content of the engineering report shall comply with the provisions of rules and regulations to be issued by the Building Official pursuant to San Francisco Building Code Section 104A.2.1 after consultation with the Seismic Safety Retrofit

Bond Program Board. See San Francisco Building Code Section 110A, Table 1A-S for the applicable fee for the review of the engineering report.

**504B.2.4 Application for building permit.** The owner shall submit to the Department an application for a structural alteration permit accompanied by structural plans, specifications and calculations for the proposed mitigation solution or a permit application to demolish the building. Time limits for submission of the application and for permit processing and approval are established in Table 5B-A.

**504B.2.5 Commencement and completion of construction.** Construction work shall commence and a Certificate of Final Completion and Occupancy or final inspection of work under a demolition permit shall be obtained within the time limits set forth in Table 5B-A.

**504B.2.6 Transfer of title.** No transfer of title shall alter the time limits for compliance set forth in Table 5B-A.

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## **SECTION 505B – ADMINISTRATION**

**505B.1 Service of Notice.** The ordinance enacting Chapters 5B and 5C that the Building Official, not later than February 15, 1993, issue a notice to comply with Section 504B.1 to the owner of each building known by the Department to be within the scope of these chapters. The notice shall be accompanied by an informational letter or brochure and a sample inventory form. The enacting ordinance further provided that if, on or before February 15, 1993, an owner of an unreinforced masonry bearing wall building had knowledge that he or she owns such a building, then failure of the Building Official to issue a notice or failure of the owner to receive such a notice would not relieve the owner of the obligation to comply with the provisions of Chapters 5B and 5C within the time limits set forth in Table 5B-A. An owner is presumed to have knowledge that he or she owns an unreinforced masonry bearing wall building if the building is on the inventory list of potential hazardous unreinforced masonry bearing wall buildings required by Section 8877(a) of the California Government Code.

For buildings not known to the Department to be unreinforced masonry bearing wall buildings and whose owners had no knowledge that the buildings are unreinforced masonry bearing wall buildings, the ordinance provided that the time limits set forth in Table 5B-A shall commence upon the owners having actual or constructive knowledge that their buildings are unreinforced masonry bearing wall buildings.

The time limits for compliance with the provisions of this Chapter 5B and Chapter 5C have passed, however the compliance requirements are still in effect. As provided above, for those buildings within the scope of Chapters 5B and 5C not known to the Department to be unreinforced masonry bearing wall buildings, and whose owners did not have actual or constructive knowledge that their buildings are unreinforced masonry bearing wall buildings, the time limits set forth in Table 5B-B commences upon the owners having such actual or constructive knowledge. Those owners who had actual knowledge on or before February 15, 1993, or are presumed to have had such knowledge, are in violation of this Code and are subject to enforcement action by the Department pursuant to Section 102A of the Building Code.

**505B.2 Appeal from Notice.** The owner or the owner's agent may appeal the Building Official's notice to the Board of Examiners in accordance with San Francisco Building Code Section 105A.1.

**505B.3 Processing and Recordation.** Within 30 days of receipt of the inventory form, the Building Official shall review it and either approve it as submitted or reject it and return it for correction. Inventory forms returned for correction shall be revised by the owner's architect or

engineer and returned to the Department within 30 days of the date of the Department's initial rejection. The Building Official shall cause to be recorded with the Assessor-Recorder's Office a notice of the requirement for structural alteration or demolition and the inventory form. The Building Official may cause such a notice to be recorded upon expiration of the time limits for submittal of the inventory form as stated in Table 5B-A.

**505B.4 Enforcement.** Whenever an inventory form has not been submitted or a notice issued by the Building Official to structurally alter or demolish an unreinforced masonry bearing wall building has not been complied with within the time limits set forth in Table 5B-A, the Building Official shall have the power to abate the building in accordance with San Francisco Building Code Section 102A.

**505B.5 Removal from Inventory.** After all of the retrofit work required by this chapter and Chapter 5C has been completed in any building to the satisfaction of the Building Official and a Certificate of Final Completion and Occupancy has been issued in accordance with San Francisco Building Code Section 109, or after a final inspection of building demolition work has been made, or if the Building Official finds that no retrofit work is required, the Building Official shall remove that building from the inventory list of potentially hazardous unreinforced masonry bearing wall buildings required by Section 8877(a) of the California Government Code. The Building Official shall thereupon cause to be filed with the Assessor-Recorder's Office a release of any notice or Abatement Order recorded under Section 505B.3 or 505B.4. Additionally, the Department shall furnish to each owner upon satisfactory completion of a retrofit a sign, on a standard Department form, of the same size as that required by California Government Code Section 8875.8, stating "This building has been seismically retro-fitted to reduce the risk of death or injury in the event of a major earthquake pursuant to Chapters 5B and 5C of the San Francisco Existing Building Code." The sign shall also indicate the retrofit procedure used and shall bear the signature of the Building Official. The posting of the sign shall be at the option of the owner.

**505B.6 Voluntary Seismic Strengthening.** The owner of a building that is exempt from compliance with this chapter may voluntarily retrofit the building using the procedures for seismic strengthening set forth in Chapter 5C .

**505B.7 Application of Future Retrofitting Legislation.** It is the present intent of the Board of Supervisors that, absent a compelling public safety necessity, buildings strengthened pursuant to Chapter 5C will not be subject to future mandatory seismic retrofitting legislation adopted by the Board.

**505B.8 Phased Strengthening.** Other provisions of this code notwithstanding, an unreinforced masonry bearing wall building may be strengthened in phases under multiple alteration permits, provided:

1. A complete structural analysis accompanied by plans, specifications and calculations for the proposed mitigation solution is submitted to the Department with the first alteration permit application; and
2. A phasing program is submitted to and approved by the Department as part of the review of the first alteration permit application; and
3. Each subsequent alteration permit application clearly indicates the further work proposed and the work completed to date; and
4. The engineer or architect responsible for the structural design for the strengthening program provides structural requirements observation in accordance with San Francisco Building Code Section 1704.6; and



5. All of the required strengthening work is completed within the time limits set forth in Table 5B-A.

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## **SECTION 506B – EXISTING UTILITY, FIRE PROTECTION, LIFE-SAFETY SYSTEMS, HOMELESS SHELTERS AND DISABLED ACCESS REQUIREMENTS**

This chapter does not require alteration of existing electrical, plumbing, mechanical, fire protection or life-safety systems which are in compliance with the code in effect at the time of their construction or installation. The application of SFEBC Section ~~501.5~~ 501.7 relating to homeless shelters does not waive the requirement for compliance with the provisions of this chapter and Chapter 5C within the time limits set forth in Table 5B-A. This section does not exempt any building from compliance with the requirements of State or Federal disability access regulations.

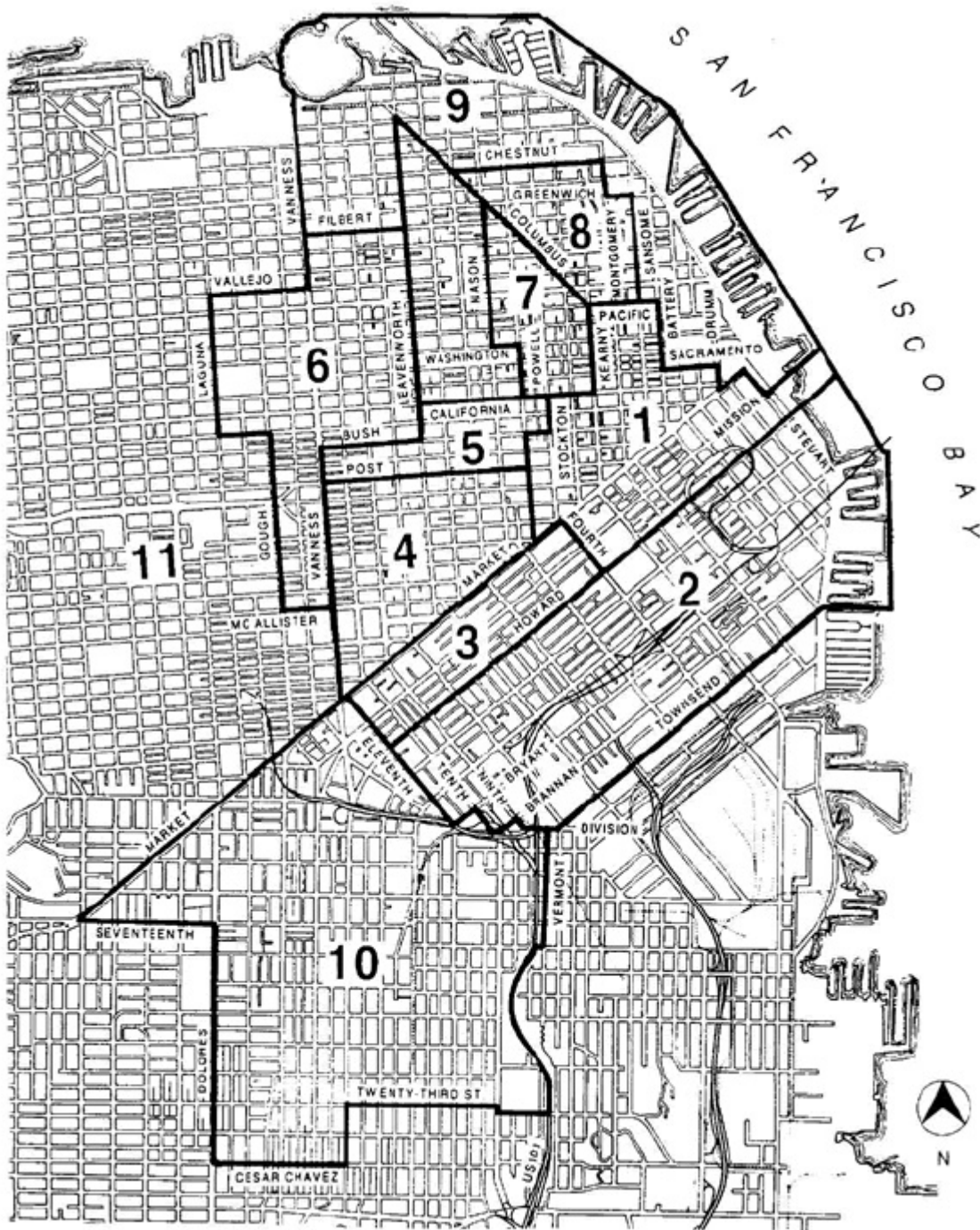
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## **SECTION 507B – ENERGY CONSERVATION**

The provisions of California Code of Regulations, Title 24, Part 6, the California Energy Code, San Francisco Housing Code, Chapter 12 (the Residential Energy Conservation Ordinance) are not applicable to buildings altered as required by this chapter, unless the alteration work also constitutes a change in use as defined in SFEBC Section 506, or increases the conditioned space or alters the lighting or mechanical systems.

### **FIGURE 5B-1 – UNREINFORCED MASONRY BUILDING STUDY AREAS**

- 1 Downtown
- 2 South of Market
- 3 South of Market/Residential
- 4 North of Market/Civic Center
- 5 Bush Street Corridor
- 6 Van Ness/Polk
- 7 Chinatown
- 8 North Beach
- 9 Waterfront
- 10 Mission/Upper Market
- 11 Outlying



**TABLE 5B-A – PROGRAM IMPLEMENTATION SCHEDULE** <sup>1,2</sup>

I	II	III	IV	V
<b>Risk Level of Building</b>	<b>Submission of Inventory Form to DBI</b>	Application of Building Permit with Plans or	Permit Processing and Approval <sup>4</sup>	Structural Alterations Completion <sup>3,4</sup>

		Application for Demolition <sup>4</sup>		
1	1.0	2.0	2.5	3.5
2	1.0	2.5	3.0	5.0
3	1.0	8.0	9.0	11.0
4	1.0	10.0	11.0	13.0

<sup>1</sup> All time periods are in years measured from February 15, 1993.

<sup>2</sup> When compliance with this table is required, the time limits and extensions of San Francisco Building Code Chapter 1A are not applicable.

<sup>3</sup> One or more extensions of time totaling not more than two years may be approved by the Building Official for a building with preexisting lease(s) due to expire, for tenant relocation conditions, for delays in obtaining financing under the City bond fund loan program and for other conditions causing delay. Such extension requests must be submitted to the Chief Building Inspector in writing prior to the expiration of the permit with payment of a fee. Any construction inspection granted under this footnote during the period of extension will require payment of an inspection fee in addition to the basic extension fee. These extensions are not cumulative with the extensions allowed by Footnote 4.

<sup>4</sup> For structures containing Occupancy Group A or E and owned by organizations exempt from taxation under the Internal Revenue laws of the United States and the Revenue and Taxation Code of the State of California as bona fide fraternal, charitable, benevolent, religious or other nonprofit organizations, extensions of time in increments of not more than three years up to the maximum time limit set forth in Column V of this table may be approved by the Building Official, provided all of the following conditions are met:

1. The owner demonstrates that an application has been made for funding available under the general obligation bond or the owner is actively seeking other sources of funds; and

2. The building is vacated and secured to the Building Official's satisfaction. For Occupancy Group A buildings only, in lieu of vacation, an owner may agree in writing to limit occupancy of the building for use as an assembly building with an actual occupant load greater than 299 persons to not more than 12 hours per week or four hours in any one day. The signs required by California Government Code Section 8875.8 shall also be posted at each entrance to the building; and

3. When deemed necessary by the Building Official, pedestrian protection canopies complying with San Francisco Building Code Chapter 33 and Department of Public Works Order No. 157,501 are erected and maintained along sidewalks adjacent to the building; and

4. The Building Official finds that there is no hazard to any adjacent building or that hazard is satisfactorily mitigated; and

5. The owner, for the period of time in which the extension is in effect, agrees not to file an application for a demolition permit.

Add the following Chapter:

## Chapter 5C

# SEISMIC STRENGTHENING PROVISIONS FOR UNREINFORCED MASONRY BEARING WALL BUILDINGS

(NOTE: The time limits for compliance with the provisions of Chapters 5B and 5C have passed, but the ordinance and the time limits therein are still in effect.)

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### SECTION 501C – PURPOSE

The purpose of this chapter is that stated in Section 501B.

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### SECTION 502C – SCOPE

**502C.1 General.** The seismic strengthening of unreinforced masonry bearing wall buildings shall comply with the provisions of this chapter when strengthening either is mandated by Chapter 5B or is done voluntarily under Section 505B.6. The elements regulated by this chapter shall be determined in accordance with Table 5C-A. Except as provided herein, other structural provisions of this code shall apply.

**502C.2 Essential and Hazardous Facilities.** The provisions of this chapter are not intended to apply to the strengthening of buildings or structures in Risk Categories III and IV of ASCE 7-16 Table 1.5-1. Such buildings or structures shall be strengthened to meet the requirements of this code for new buildings of the same occupancy category or to such other criteria as has been established by the Building Official.

**502C.3 Unreinforced Masonry Private School Buildings.** The strengthening of unreinforced masonry private school buildings shall comply with Sections 17320-17336 of the California Education Code.

**502C.4 Qualified Historical Buildings.** Qualified historical buildings shall be strengthened to comply with this chapter or the alternative provisions contained in Title 24, California Code of Regulations, Part 8, the State Historical Building Code.

**502C.5 Party Wall Buildings.** In buildings separated by party walls, all segments sharing the party walls shall be strengthened at the same time whenever feasible. When such action is not feasible, a party wall in any segment undergoing strengthening shall be provided with the capacity to resist a reasonable estimate of the shear forces generated by the adjacent unstrengthened segments.

**502C.6 Buildings of Mixed Construction.** When buildings having at least one bearing wall of unreinforced masonry also utilize other structural systems, the following requirements shall apply:

**502C.6.1 Masonry-wood or steel mix.** When the lower stories of the building are of unreinforced masonry bearing wall construction and the upper stories are of wood frame or steel stud construction, the unreinforced masonry stories shall be strengthened to meet the requirements of the general procedure of this chapter and the other stories need not be strengthened.

**502C.6.2 Masonry-concrete mix.** When a building is of mixed unreinforced masonry bearing wall construction and reinforced concrete or masonry construction, the entire building shall be strengthened in accordance with a program developed by the owner's architect or engineer and approved by the Building Official.

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## SECTION 503C – DEFINITIONS

For the purpose of this chapter, the applicable definitions in this code shall also apply.

**COLLAR JOINT** is the vertical space between adjacent wythes and may contain mortar.

**CROSSWALL** is a new or existing wall that meets the requirements of Section 511C.3. A crosswall is not a shear wall.

**CROSSWALL SHEAR CAPACITY** is the allowable shear value times the length of the crosswall,  $v_cLo$ .

**DIAPHRAGM EDGE** is the intersection of the horizontal diaphragm and a shear wall.

**DIAPHRAGM SHEAR CAPACITY** is the allowable shear value times the depth of the diaphragm,  $v_uD$ .

**ESSENTIAL FACILITY** is any building or structure classified in Risk Category IV of ASCE 7-16 Table 1.5-1.

**HAZARDOUS FACILITY** is any building or structure classified in Risk Category III of 7-16 Table 1.5-1.

**NORMAL WALL** is a wall perpendicular to the direction of seismic forces.

**OPEN FRONT** is an exterior building wall line, without vertical elements of the lateral force resisting system in one or more stories.

**PARTY WALL** is a wall common to two or more buildings located on separate parcels of land.

**POINTING** is the partial reconstruction of the bed joints of an unreinforced masonry wall as defined in Section 516C.

**QUALIFIED HISTORICAL BUILDING** is a building or structure as defined in the June 1, 1990, Edition of Title 24, California Code of Regulations, Part 8, Section 8-302.

**UNREINFORCED MASONRY** includes burned clay, concrete or sand-lime brick, hollow clay or concrete block, plain concrete and hollow clay tile. These materials shall comply with the requirements of Section 506C.

**UNREINFORCED MASONRY WALL** is a masonry wall in which the area of reinforcing steel is less than 25 percent of the minimum steel ratios required by this code for reinforced masonry. To qualify, reinforcing steel must have been installed in grouted cells within the masonry.

**UNREINFORCED MASONRY BEARING WALL** is an unreinforced masonry wall which provides the vertical support for a floor or roof for which the total superimposed load exceeds 200 pounds per linear foot (298 kg/m) of wall.

**YIELD STORY DRIFT** is the lateral displacement of one level relative to the level above or below at which yield stress is first developed in a frame member.

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## SECTION 504C – SYMBOLS AND NOTATIONS

**504C.1** For the purpose of this chapter, the applicable symbols and notations in this code shall apply.

$A$  = cross sectional area of unreinforced masonry pier or wall, square inches.

$A_b$  = total area of the bed joints above and below the test specimen for each in-place shear test.

$C_p$  = numerical coefficient as specified in Table 5C-C for Special Procedure diaphragm shear transfer.

$D$  = in-plane width dimension of pier, inches, or depth of diaphragm, feet.

DCR = demand-capacity ratio specified in Section 511C.4.2.

$F_{wx}$  = force applied to a wall at level x, pounds.

H = least clear height of opening on either side of a pier, inches.

$h/t$  = height-to-thickness ratio of an unreinforced masonry wall. Height, h, is measured between wall anchorage levels and/or slab-on-grade.

L = span of diaphragm between shear walls, or span between shear wall and open front, feet.

$L_o$  = length of crosswall, feet.

$L_i$  = effective span for an open front building specified in Section 511C .8, feet.

$P_D$  = superimposed dead load at the location under consideration, pounds. For determination of the rocking shear capacity, dead load at the top of the pier under consideration shall be used.

$P_{D+L}$  = stress resulting from the dead plus actual live load in place at the time of testing, pounds per square inch (psi).

$P_w$  = weight of wall, pounds.

$V_a = v_a A$ , the allowable shear in any unreinforced masonry pier, pounds.

$V_{ca}$  = total shear capacity of crosswalls in the direction of analysis immediately above the diaphragm level being investigated,  $\phi v_c L_o$ , pounds.

$V_{cb}$  = total shear capacity of crosswalls in the direction of analysis immediately below the diaphragm level being investigated,  $\phi v_c L_o$ , pounds.

$V_p$  = shear force assigned to a pier on the basis of its relative shear rigidity, pounds.

$V_r$  = pier rocking shear capacity of any unreinforced masonry wall or wall pier, pounds.

$V_{test}$  = load at incipient cracking for each in-place shear test per Section 514C, pounds.

$V_{wx}$  = total shear force resisted by a shear wall at the level under consideration, pounds.

$v_a$  = allowable shear stress for unreinforced masonry, pounds per square inch (psi).

$v_c$  = allowable shear value for a crosswall sheathed with any of the materials given in Table 5C-D or 5C-E, pounds per foot.

$v_i$  = mortar shear strength as specified in Section 506C.3.3.4, pounds per square inch (psi).

$v_{io}$  = mortar shear test values as specified in Section 506C.3.3.4, pounds per square inch (psi).

$v_u$  = allowable shear value for a diaphragm sheathed with any of the materials given in Table 5C-D or 5C-E, pounds per foot.

$\Sigma v_u D$  = sum of diaphragm shear capacities of both ends of the diaphragm, pounds.

$\Sigma \Sigma v_u D$  = for diaphragms coupled with crosswalls,  $\Sigma \Sigma v_u D$  includes the sum of shear capacities of both ends of diaphragms coupled at and above the level under consideration.

W = total seismic dead load as defined in San Francisco Building Code Chapter 16, pounds.

$W_d$  = total dead load tributary to a diaphragm, pounds.

$\Sigma W_d$  = total dead load to all the diaphragms at and above the level under consideration, pounds.

$W_w$  = total dead load to an unreinforced masonry wall above the level under consideration or above an open front building, pounds.

$W_{wx}$  = dead load of an unreinforced masonry wall assigned to Level x halfway above and below the level under consideration, pounds.

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## SECTION 505C – GENERAL REQUIREMENTS

**505C.1 General.** All buildings shall have a seismic resisting system conforming with ASCE 7-16 Section 12.2, except as modified by this chapter.

**505C.2 Alterations and Repairs.** Alterations and repairs required to meet the provisions of this chapter shall comply with all other applicable structural requirements of this code unless specifically provided for in this chapter.

**505C.3 Requirements for Plans.** In addition to the requirements of San Francisco Building Code Section 106A.3.3 of this code, the following construction information shall be included in the plans required by this chapter:

1. Dimensioned floor and roof plans showing existing walls and the size and spacing of floor and roof framing members and sheathing materials. The plans shall indicate all existing and new crosswalls and shear walls and their materials of construction. The location of these walls and their openings shall be fully dimensioned and drawn to scale on the plans.
2. Dimensioned wall elevations showing openings, piers, wall classes as defined in Section 506C.3.3.6, thickness, heights, wall shear test locations, and cracks or damaged portions requiring repairs. Where the exterior face is veneer, the type of veneer, its thickness and its bonding and/or ties to the structural wall masonry shall also be noted.
3. The type of interior wall and ceiling materials and framing.
4. The extent and type of existing wall anchorage to floors and roof when used in the design.
5. The extent and type of parapet and appendage corrections which were previously performed, if any.
6. Repair details, if any, of cracked or damaged unreinforced masonry wall walls required to resist forces specified in this chapter.
7. All other plans, sections and details necessary to delineate required retrofit construction.
8. The design procedure used shall be stated on both the plans and the permit application.
9. Details of the anchor prequalification program required by Section 515C, if utilized, including location and results of all tests.
10. In buildings with party walls, the details of construction on both sides of each party wall shall be shown. Where required by Section 511C.1, Item 5 the owners' consent statements shall be included with the plans.

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## **SECTION 506C – MATERIALS REQUIREMENTS**

**506C.1 General.** All materials permitted by this chapter, including their appropriate allowable design values and those existing configurations of materials specified herein, may be utilized to meet the requirements of this chapter.

**506C.2 Existing Materials.** All existing materials utilized as part of the required vertical load-carrying or lateral force-resisting system shall be in sound condition or shall be repaired or removed and replaced with new materials. All unreinforced masonry materials shall comply with the following requirements:

1. The construction (lay-up) of the masonry units complies with Section 506C.3.2 and the quality of bond between the units has been verified to the satisfaction of the Building Official.
2. Concrete masonry units are verified to be load-bearing units complying with ASTM Standard Specification C 90 or such other standard as is acceptable to the Building Official.
3. Hollow clay tile units are verified to be structural load-bearing units complying with ASTM Standard Specification C 34 or such other standard as is acceptable to the Building Official.
4. The compressive strength of plain concrete walls shall be determined based on cores taken from each class of concrete wall. The location and number of tests shall be the same as prescribed for strength tests in Sections 506C.3.3.2 and 506C.3.3.3.

**506C.3 Existing Unreinforced Masonry Walls.**

**506C.3.1 General.** All unreinforced masonry walls utilized to carry vertical loads or seismic forces parallel and perpendicular to the wall plane shall be tested as specified in this section. All

masonry that does not meet the minimum standards established by this chapter shall be removed and replaced with new materials, repaired or alternatively shall have its structural functions replaced with new materials and shall be anchored to supporting elements.

### **506C.3.2 Construction (lay-up) of walls.**

**506C.3.2.1 Multi-wythe solid brick.** The facing and backing shall be bonded so that not less than 10 percent of the exposed face area is composed of solid headers extending not less than 4 inches (101.6 mm) into the backing. The clear distance between adjacent full-length headers shall not exceed 24 inches (609.6 mm) vertically or horizontally. Where the backing consists of two or more wythes, the headers shall extend not less than 4 inches (101.6 mm) into the most distant wythe or the backing wythes shall be bonded together with separate headers whose area and spacing conform to the foregoing. Wythes of walls not bonded as described above shall be considered as veneer. Veneer wythes shall not be included in the effective thickness used in calculating the height to thickness and the shear capacity of the wall.

**506C.3.2.2 Grouted or ungrouted hollow concrete or clay block and structural hollow clay tile.** These materials shall be laid in a running bond pattern.

Other lay-up patterns may be acceptable if their performance can be justified as being at least equal to those specified above.

### **506C.3.3 Mortar.**

**506C.3.3.1 Tests.** The quality of mortar in all masonry walls shall be determined by performing in-place shear tests in accordance with Section 514C. Alternative methods of testing may be approved by the Building Official for masonry walls other than brick.

**506C.3.3.2 Location of tests.** The shear tests shall be taken at locations representative of the mortar conditions throughout the entire building, taking into account variations in workmanship at different building height levels, variations in weathering of the exterior surfaces, and variations in the condition of the interior surfaces due to deterioration caused by leaks and condensation of water and/or by the deleterious effects of other substances contained within the building. The exact test locations shall be determined at the building site by the engineer or architect in responsible charge of the structural design work. An accurate record of all such tests and their location in the building shall be recorded, and these results shall be submitted to the Department for approval as part of the structural analysis.

**506C.3.3.3 Number of tests.** The minimum number of tests per class shall be as follows:

1. At each of both the first and top stories, not less than two tests per wall or line of wall elements providing a common line of resistance to lateral forces.
2. At each of all other stories, not less than one test per wall or line of wall elements providing a common line of resistance to lateral forces.
3. In any case, not less than one test per 1,500 square feet (139.355 m<sup>2</sup>) of wall surface nor less than a total of eight tests.

### **506C.3.3.4 Minimum quality of mortar.**

1. Mortar shear test values,  $v_{to}$ , in psi shall be obtained for each in-place shear test in accordance with the following equation:

$$v_{to} = (V_{test}/A_b) - P_{D+L} \quad (5C-1)$$

2. The mortar shear strength,  $v_t$ , is the value in psi that, after discarding the lowest 20 percent of the mortar shear test values,  $v_{to}$ , is the lowest of the remaining 80 percent of the mortar shear test values.

3. Any unreinforced masonry bearing wall with  $v_{to}$ , or with mortar shear strength,  $v_t$ , less than 30 psi (206.84 kPa) shall be either removed, entirely pointed and retested or have its structural



function replaced and shall be anchored to supporting elements in accordance with Section 506C.3.1 and Section 513C.8. When existing mortar in any wythe is pointed to increase its shear strength and retested, the condition of the mortar in the adjacent bed joints of the inner wythe or wythes and the opposite outer wythe shall be examined for extent of deterioration. The shear strength of any wall class shall be no greater than that of the weakest wythe of that class.

**506C.3.3.5 Collar joints.** The collar joints shall be inspected at the test locations during each in-place shear test, and estimates of the percentage of the surfaces of adjacent wythes which are covered with mortar shall be reported along with the results of the in-place shear tests.

**506C.3.3.6 Unreinforced masonry classes.** All existing unreinforced masonry shall be categorized into one or more classes based on quality of construction, state of repair, deterioration and weathering. A class shall be characterized by the allowable masonry shear stress determined in accordance with Section 508C.2. Classes shall be defined for whole walls, not for small areas of masonry within a wall.

**506C.3.3.7 Pointing.** All deteriorated mortar joints in unreinforced masonry bearing walls shall be pointed according to Section 516C. Nothing shall prevent pointing of any deteriorated masonry wall joints before the tests are made, except as required in Section 507C.1.

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## SECTION 507C – QUALITY CONTROL

**507C.1 Pointing.** All preparation and mortar pointing shall be performed with special inspection.

*EXCEPTION:* At the discretion of the Building Official, incidental pointing may be performed without special inspection.

**507C.2 Masonry Shear Tests.** In-place shear tests shall comply with Section 514C.

**507C.3 Existing Wall Anchors.** Existing wall anchors utilized as all or part of the required tension anchors shall be tested in pullout according to Section 515C. The minimum number of anchors tested shall be four per floor, with two tests at walls with joists framing into the wall and two tests at walls with joists parallel to the wall, but not less than 10 percent of the total number of existing tension anchors at each level.

**507C.4 New Bolts.** Twenty-five percent of all new embedded bolts resisting only shear forces in unreinforced masonry walls shall be tested using a calibrated torque wrench in accordance with Section 515C.

*EXCEPTION:* The number of bolts tested may be reduced to 10 percent when special inspection in accordance with Section 1704 is provided during installation but in no case shall less than two bolts per 500 square feet (46.45 m<sup>2</sup>) of wall or four bolts per wall be tested.

All new embedded bolts resisting tension forces or a combination of tension and shear forces shall be subject to periodic special inspection in accordance with San Francisco Building Code Section 1704 prior to placement of the bolt and grout or adhesive in the drilled hole. Five percent of all embedded bolts resisting tension forces, but not less than two bolts, shall be subject to a direct tension test and an additional 20 percent, but not less than three bolts, shall be tested using a torque calibrated wrench. Testing shall be performed in accordance with Section 515C.

New through bolts and existing bolts installed under the Parapet Safety Program need not be tested.

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## SECTION 508C – ALLOWABLE DESIGN VALUES

**508C.1 Allowable Values.**

**508C.1.1 Existing materials.** Allowable values for existing materials are given in Table 5C-D, and for new materials in Table 5C-E.

**508C.1.2 Values not specified.** Allowable values not specified in this chapter shall be as specified elsewhere in this code.

**508C.2 Masonry shear.** The allowable unreinforced masonry shear stress,  $v_a$  shall be determined for each masonry class from the following equation:

$$v_a = 0.1v_t + 0.15P_D/A \quad (5C-2)$$

The mortar shear test value,  $v_t$ , shall be determined in accordance with Section 506C.3.3, and shall not exceed 100 psi (689.476 kPa) for the determination of  $v_a$ .

The one-third increase in allowable values of this code for short-term loading is not allowed for  $v_a$ .

**508C.3 Masonry Compression.** Where any increase in dead plus live compression stress occurs, the allowable compression stress in unreinforced masonry shall not exceed 100 psi (689.476 kPa). The one-third increase in allowable stress of this code is allowed.

**508C.4 Masonry Tension.** Unreinforced masonry shall be assumed as having no tensile capacity.

**508C.5 Unreinforced Masonry Materials Other Than Solid Brick.** The provisions of this chapter are primarily intended for brick construction but are also applicable to other unreinforced masonry materials when the following conditions are satisfied:

1. The building does not exceed two stories in height.
2. In the case of hollow concrete and clay block, the shear stress is limited to that permitted by Equations 5C-1 and 5C-2 based on the net area in contact through the bed joints but not more than that calculated using a mortar shear strength,  $v_t$ , of 100 psi (689.476 kPa).
3. In the case of plain concrete, the compressive strength ( $f'_c$ ) shall be not less than 900 psi (6,205.28 kPa) and the allowable shear strength is limited to not more than  $0.02f'_c$ .
4. In the case of all other unreinforced masonry materials, the shear stress is limited to 3 psi (20.684 kPa) based on the net area in contact through the bed joint.

Unreinforced masonry not meeting the above criteria shall have its structural function replaced and shall be resupported, if required, in accordance with Section 513C.8.

**508C.6 Existing Tension Anchors.** The allowable resistance values of the existing anchors shall be 40 percent of the average of the tension tests of existing anchors having the same wall thickness and joist orientation. The one-third increase in allowable value of this code is not allowed for existing tension anchors.

**508C.7 Foundations.** For existing foundations, new total dead loads may be increased over existing dead load by 25 percent. New total dead load plus live load plus seismic forces may be increased over existing dead load plus live load by 50 percent.

**EXCEPTION:** In buildings located in poor soil areas as defined in Chapter 5B, any increase in dead load shall require an evaluation of the existing foundation system.

Higher values may be justified only in conjunction with a geotechnical investigation. A foundation investigation shall be also submitted with the building permit application when:

1. A building has an existing full or partial pile supported, or similar foundation system or whenever the installation of such a system is proposed as part of the strengthening.
2. Whenever there is evidence of significant distress attributable to foundation or geotechnical conditions.
3. An investigation is required by San Francisco Building Code Section 1803 or 1804.

4. It is desired to prove that the building is not on poor soil as permitted by the exception to Section 503B.

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## **SECTION 509C – SELECTION OF PROCEDURE**

**509C.1 General.** Except as modified herein, the analysis and design relating to the structural alteration of existing buildings shall be in accordance with this code.

**509C.2 Selection of Procedure.** All buildings shall be analyzed by either the General Procedure of Section 510C or, when applicable, buildings may be analyzed by the Special Procedure of Section 511C.

***EXCEPTIONS:***

1. A building may be strengthened to the Bolts-plus level by complying only with the requirements for wall anchorage (tension bolts), diaphragm shear transfer (shear bolts) and out-of-plane wall and parapet and appendage bracing, provided the entire building complies with all of the following requirements:

(1) The building does not have any vertical irregularities of Types 1a or 1b (Soft Story), 4 (In-Plane Discontinuity) or 5a or 5b (Weak Story) as defined in ASCE 7-16 Table 12.3-2 or horizontal irregularities of Types 3 (Diaphragm Discontinuity) or 4 (Out-of-Plane Offset) as defined in ASCE 7-16 Table 12.3-1 or those irregularities are corrected.

(2) The building does not contain any Group A Occupancies with an occupant load of 300 or more, or Group E, Group I or Group H-1, H-2 or H-4 Occupancies.

(3) The building has a mortar shear strength,  $v_t$ , as determined by Section 506C.3.3, of 30 psi (206.843 kPa) or more for all masonry classes.

(4) The building has wood or plywood diaphragms at all levels above the base of building.

(5) The building contains a maximum of six stories above the base of the building. The base shall be the ground level and basement or basements shall be excluded from the story count.

***EXCEPTION:*** In an otherwise qualifying building of greater than six stories, a maximum of six of the uppermost contiguous stories may be retrofitted using the Bolts-Plus Procedure, providing the building is not located on poor soil as defined in Section 503B. The masonry walls required by Item 7 below shall occupy not less than 50 percent of the wall length in the lowest two of the uppermost six stories. Nonqualifying stories and stories below the uppermost six shall be retrofitted to any other procedure for which they qualify.

(6) The building has or will be provided with crosswalls as defined in Section 511C.3 at a spacing that does not exceed 40 feet (12.192 m) on center. Any story which does not have or is not provided with complying crosswalls and all stories below that story shall be analyzed using the General Procedure of Section 510C or, where applicable, the Special Procedure of Section 511C. The floor structure that separates the Bolts-Plus and General or Special Procedure stories shall be investigated for its adequacy to act as a diaphragm in accordance with Section 510C.1 or, where the Special Procedure is applicable, Section 511C.4.

(7) The building has or will be provided with a minimum of two lines of vertical elements of the lateral force resisting system parallel to each axis. Masonry walls shall have wall piers with a height-to-width ratio that does not exceed 2 to 1 and shall occupy not less than 40 percent of the wall's length in order to be considered as providing a line of resistance. Existing moment frames and other lines of resistance added or altered to comply with this requirement shall fully comply with Section 512C. At least one line in each direction shall be a masonry or concrete shear wall.

(8) In buildings containing one or more party walls, the Bolts-Plus Procedure shall not be used unless each building sharing a party wall individually complies with all of the limitations set forth above and the owner of each such building consents to the use of the procedure in writing.

When the Bolts-Plus Procedure is applicable, the forces to be used for diaphragm shear transfer and irregularity correction shall be those specified in Sections 511C.5 and 511C.6 and h/t ratios shall be evaluated in accordance with Section 511C.7. When the intersection of the diaphragm span and demand capacity ratio falls outside the three regions of Figure 5C-1, the h/t ratios for “all other buildings” in Table 5C-B shall be used. The measures used to comply shall be part of, and be coordinated with, the complete strengthening scheme described in the engineering report required by Section 504B.2.3.

2. Buildings which are strengthened to conform to the requirements of SFEBC Section 303.4-304.4 in effect on or after May 21, 1973, are exempt from compliance with the provisions of this chapter.

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## SECTION 510C – GENERAL PROCEDURE

**510C.1 Minimum Design Lateral Forces.** Buildings shall be analyzed to resist minimum lateral forces assumed to act nonconcurrently in the direction of each of the main axes of the structure in accordance with the following:

$$V = 0.10 W \quad (5C-3)$$

**EXCEPTION:** The lateral forces need not exceed those prescribed by San Francisco Building Code Section 1613.

For buildings more than one story in height, the total force shall be distributed over the height of the building in accordance with the procedures of San Francisco Building Code Chapter 16.

For the purpose of this chapter, a dynamic analysis need not be performed for those buildings with irregularities, as defined in ASCE 7-16 Table 12.3-2 and ASCE 7-16 Table 12.3-1 which would otherwise require such analysis. All other design and analysis requirements of those tables shall apply.

**510C.2 Lateral Forces on Elements of Structures.** Parts of structures shall be analyzed and designed as required in San Francisco Building Code Chapter 16 .

**EXCEPTIONS:**

1. Unreinforced masonry walls for which height-to-thickness ratios do not exceed ratios set forth in Table 5C-B need not be analyzed for out-of-plane loading. Unreinforced masonry walls which exceed the allowable h/t ratios of Table 5C-B shall be braced according to Section 513C.5.

2. Parapets complying with Section 513C.6 need not be analyzed for out-of-plane loading.

3. Out-of-plane anchorage of the walls shall be designed to 0.3 times the mass of the wall.

**510C.3 Shear Walls (In-Plane Loading).** Shear walls shall comply with Section 512C.

**510C.4 Chords.** When required by the structural analysis, chord forces of horizontal diaphragms shall be developed in existing materials or by the addition of new materials.

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## SECTION 511C – SPECIAL PROCEDURE

**511C.1 Limits for Application.** The Special Procedure of this section may only be applied to buildings with the following characteristics:

1. The building is not an essential or hazardous facility.

2. Wood or plywood diaphragms at all levels above the base of structure.
3. A maximum of six stories above the base of the building. The base shall be the ground level, and basement or basements shall be excluded from the story count.

**EXCEPTION:** An otherwise qualifying building of greater than six stories may also be retrofitted using the Special Procedure, provided the building is not located on poor soil as defined in Section 503B or does not contain any Group A Occupancies with an occupant load of 300 or more, or Group E, or Group I Occupancies.

4. Except for single-story buildings with an open front on one side only, a minimum of two lines of vertical elements of the lateral force resisting system complying with Section 512C parallel to each axis. At least one line in each direction shall be a masonry or concrete shear wall. Requirements for open front buildings are contained in Section 511C.8.

5. In buildings containing one or more party walls, the Special Procedure shall not be used unless each building sharing a party wall individually complies with all of the limitations set forth above, and the owner of each such building consents to the use of the procedure in writing.

**511C.2 Lateral Forces on Elements of Structures.** With the exception of the diaphragm provisions in Section 511C .4, elements of structures shall comply with Section 510C.2.

**511C.3 Crosswalls.** Crosswalls when used shall meet the requirements of this section.

**511C.3.1 Crosswall definition.** A “crosswall” is a wood-framed wall sheathed with any of the materials described in Table 5C-D or 5C-E or other system as defined in Section 511C .3.5. Spacing of crosswalls shall not exceed 40 feet (12.19 m) on center measured perpendicular to the direction of consideration and shall be placed in each story of the building. Crosswalls shall extend the full story height between diaphragms.

**EXCEPTIONS:**

1. Crosswalls need not be provided at all levels in accordance with Section 511C.4.2(4).
2. Existing crosswalls need not be continuous below a wood diaphragm at or within 4 feet (1.219 m) of grade, provided:
  - (1) Shear connections and anchorage requirements, Section 511C.5 are satisfied at all edges of the diaphragm.
  - (2) Crosswalls with total shear capacity of  $0.08\hat{a}W_d$  interconnect the diaphragm to the foundation.
  - (3) The demand-capacity ratio of the diaphragm between the crosswalls that are continuous to their foundations shall be calculated as:

$$DCR = (0.332 W_d + V_{ca}) / 2 v_u D \quad (5C-4)$$

and DCR shall not exceed 2.5.

**511C.3.2 Crosswall shear capacity.** Within any 40 feet (12.19 m) measured along the span of the diaphragm, the sum of the crosswall shear capacities shall be at least 30 percent of the diaphragm shear capacity of the strongest diaphragm at or above the level under consideration.

**511C.3.3 Existing crosswalls.** Existing crosswalls shall have a maximum height-to-length ratio between openings of 1.5 to 1. Existing crosswall connections to diaphragms need not be investigated as long as the crosswall extends to the framing of the diaphragm above and below.

**511C.3.4 New crosswalls.** New crosswall connections to the diaphragm shall develop the crosswall shear capacity. New crosswalls shall have the capacity to resist an overturning moment equal to the crosswall shear capacity times the story height. Crosswall overturning moments need not be cumulative over more than two stories.

**511C.3.5 Other crosswall systems.** Other systems, such as moment resisting frames, may be used as crosswalls, provided that the yield story drift does not exceed 1 inch (25.4 mm) in any story.

**511C.4 Wood Diaphragms.**

**511C.4.1 Acceptable diaphragm span.** A diaphragm is acceptable if the point (L,DCR) on Figure 5C-1 falls within Regions 1, 2 or 3.

**511C.4.2 Demand-capacity ratios.** Demand-capacity ratios shall be calculated for the diaphragm at any level according to the following formulas:

1. For a diaphragm without qualifying crosswalls at levels immediately above or below:

$$DCR = 0.332 W_d / \Sigma v_u D \quad (5C-5)$$

2. For a diaphragm in a single-story building with qualifying crosswalls:

$$DCR = 0.332 W_d / \Sigma (v_u D + V_{cb}) \quad (5C-6)$$

3. For diaphragms in a multi-story building with qualifying crosswalls in all levels:

$$DCR = 0.332 \Sigma W_d / (\Sigma \Sigma v_u D + V_{cb}) \quad (5C-7)$$

DCR shall be calculated at each level for the set of diaphragms at and above the level under consideration. In addition, the roof diaphragm shall also meet the requirements of Formula (5C-6).

4. For a roof diaphragm and the diaphragm directly below if coupled by crosswalls:

$$DCR = 0.332 \Sigma W_d / \Sigma \Sigma v_u D \quad (5C-8)$$

**511C.4.3 Chords.** An analysis for diaphragm flexure need not be made and chords need not be provided.

**511C.4.4 Collectors.** An analysis of diaphragm collector forces shall be made for the transfer of diaphragm edge shears into vertical elements of the lateral force resisting system. Collector forces may be resisted by new or existing elements.

**511C.4.5 Diaphragm openings.**

**511C.4.5.1 Forces.** Diaphragm forces at corners of openings shall be investigated and shall be developed into the diaphragm by new or existing materials.

**511C.4.5.2 Demand-capacity ratio.** In addition to the demand-capacity ratios of Section 511C.4.2, the demand-capacity ratio of the portion of the diaphragm adjacent to an opening shall be calculated using the opening dimension as the span.

**511C.4.5.3 End quarter of diaphragm.** Where an opening occurs in the end quarter of the diaphragm span,  $v_u D$  for the demand-capacity ratio calculation shall be based on the net depth of the diaphragm.

**511C.5 Diaphragm Shear Transfer.** Diaphragms shall be connected to shear walls with connections capable of developing a minimum force given by the lesser of the following formulas:

$$V = 0.2 C_p W_d \quad (5C-9)$$

using the  $C_p$  values in Table 5C-C, or

$$V = v_u D \quad (5C-10)$$

**511C.6 Shear Walls (In-Plane Loading).**

**511C.6.1 Wall story force.** The wall story force distributed to a shear wall at any diaphragm level shall be the lesser value calculated as:

1. For buildings without crosswalls:

$$F_{wx} = 0.132 (W_{wx} + W_d/2) \quad (5C-11)$$

but need not exceed

$$F_{wx} = 0.132 W_{wx} + v_d D \quad (5C-12)$$

2. For buildings with crosswalls in all levels:

$$F_{wx} = 0.1 (W_{wx} + W_d/2) \quad (5C-13)$$

but need not exceed

$$F_{wx} = 0.1 [W_{wx} + \Sigma W_d (v_d D / \Sigma \Sigma v_d D)] \quad (5C-14)$$

and need not exceed

$$F_{wx} = 0.1 W_{wx} + v_d D \quad (5C-15)$$

**511C.6.2 Wall story shear.** The wall story shear shall be the sum of the wall story forces at and above the level of consideration.

$$V_{wx} = \Sigma F_{wx} \quad (5C-16)$$

**511C.6.3 Shear wall analysis.** Shear walls shall comply with Section 512C.

**511C.6.4 Moment frames.** Moment frames used in place of shear walls shall be designed as required in San Francisco Building Code Chapter 16 except that the forces shall be as specified in Section 511C.6.1 and the story drift ratio shall be limited to 0.005, except as further limited by Section 512C.4.2.

**511C.7 Out-of-Plane Forces – Unreinforced Masonry Walls.**

**511C.7.1 Allowable unreinforced masonry wall height-to-thickness ratios.** The provisions of Section 510C.2 are applicable except the allowable height-to-thickness ratios given in Table 5C-B shall be determined from Figure 5C-1 as follows:

1. In Region 1, height-to-thickness ratios for buildings with crosswalls may be used if qualifying crosswalls are present in all stories.
2. In Region 2, height-to-thickness ratios for buildings with crosswalls may be used whether or not qualifying crosswalls are present.
3. In Region 3, height-to-thickness ratios for “all other buildings” shall be used whether or not qualifying crosswalls are present.

**511C.7.2 Walls with diaphragms in different regions.** When diaphragms above and below the wall under consideration have demand-capacity ratios in different regions of Figure 5C-1, the lesser height-to-thickness ratio shall be used.

**511C.8 Open Front Design Procedure.** A single-story building with an open front on one side and crosswalls parallel to the open front may be designed by the following procedure:

1. Effective diaphragm span,  $L_i$ , for use in Figure 5C-1 shall be determined in accordance with the following formula:

$$L_i = 2 [(W_w/W_d)L + L]x \quad (5C-17)$$

2. Diaphragm demand-capacity ratio shall be calculated as:

$$DCR = 0.332 (W_d + W_w) / [(v_u D) + V_{cb}] \quad (5C-18)$$

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## SECTION 512C – ANALYSIS AND DESIGN

**512C.1 Analysis of Vertical Elements of the Lateral Force-Resisting System. General.** The following requirements are applicable to both the General Procedure and Special Procedure.

**512C.2 Existing Unreinforced Masonry Walls.**

**512C.2.1 Flexural rigidity.** Flexural components of deflection may be neglected in determining the rigidity of an unreinforced masonry wall.

**512C.2.2 Shear walls with openings.** Wall piers shall be analyzed according to the following procedure which is diagrammed in Figure 5C-2:

**512C.2.2.1** For any pier:

1. The pier shear capacity shall be calculated as:

$$V_a = v_a A_x \quad (5C-19)$$

2. The pier rocking shear capacity shall be calculated as:

$$V_r = 0.5 P_b D / H \quad (5C-20)$$

**512C.2.2.2 Pier behavior.** The wall piers at any level are acceptable if they comply with one of the following modes of behavior:

1. **Rocking controlled mode.** When the pier rocking shear capacity is less than the pier shear capacity, i.e.,  $V_r < V_a$  for each pier in a level, forces in the wall at that level,  $V_{wx}$ , shall be distributed to each pier in proportion to  $P_b D / H$ .

For the wall at that level:

$$V_{wx} < \sum V_r \quad (5C-21)$$

2. **Shear controlled mode.** Where the pier shear capacity is less than the pier rocking capacity, i.e.,  $V_r < V_a$  in at least one pier in a level, forces in the wall at the level,  $V_{wx}$ , shall be distributed to each pier in proportion to  $D / H$ .

For each pier at that level:

$$V_p < V_a \quad (5C-22)$$

and

$$V_p < V_a \quad (5C-23)$$

If  $V_p < V_a$  for each pier and  $V_p > V_a$  for one or more piers, such piers shall be omitted from the analysis, and the procedure shall be repeated for the remaining piers, unless the wall is strengthened and reanalyzed.

**512C.2.2.3 Masonry pier tension stress.** Unreinforced masonry wall piers need not be analyzed for tension stress.

**512C.2.3 Shear walls without openings.** Shear walls without openings shall be analyzed as for walls with openings except that  $V_r$  shall be calculated as follows:

$$V_r = (0.50 P_b + 0.25 P_w) D / H \quad (5C-24)$$

**512C.3 Plywood Sheathed Shear Walls.** Plywood sheathed shear walls may be used to resist lateral forces for buildings with wood diaphragms analyzed according to provisions of Section 510C. Plywood sheathed shear walls may not be used to share lateral forces with other materials along the same line of resistance.

**512C.4 Combinations of Vertical Elements.**

**512C.4.1 Lateral force distribution.** Lateral forces shall be distributed among the designated vertical resisting elements in a line in proportion to their relative rigidities except that moment frames shall comply with Section 512C.4.2.

**512C.4.2 Moment-resisting frames.** A moment frame shall not be used with an unreinforced masonry wall in a single line of resistance unless the wall has piers that are capable of sustaining rocking in accordance with Section 512C.2.2 and the frames are designed to carry 100 percent of the lateral forces, and the story drift ratio shall be limited to 0.0025.

**512C.5 Shear Force.** The shear force used in the design of any party wall shall be the sum of the shear forces contributed by each building sharing that wall.

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## SECTION 513C – DETAILED SYSTEM DESIGN REQUIREMENTS

**513C.1 Wall Anchorage.**

**513C.1.1 Anchor locations.** All unreinforced masonry walls shall be anchored at the roof and floor levels as required in Section 510C.2. Ceilings of plaster, gypsum board or similar heavier materials, when not attached directly to roof or floor framing, and abutting masonry walls, shall be either anchored to the walls at a maximum spacing of 6 feet (1.829 m) or removed.



**513C.1.2 Anchor requirements.** Anchors shall consist of bolts installed through the wall as specified in Table 5C-E, or by an approved equivalent at a maximum anchor spacing of 6 feet (1.829 m). All existing wall anchors shall be secured to the joists to develop the required forces.

**513C.1.3 Minimum wall anchorage.** Anchorage of masonry walls to each floor or roof shall resist a minimum force determined in accordance with San Francisco Building Code Chapter 16 or 200 pounds per linear foot (298 kg/m), whichever is greater, acting normal to the wall at the level of the floor or roof. Anchor spacing shall not exceed 6 feet (1.829 m) on center. Existing through-the-wall anchors, if used, must meet the requirements of this chapter or must be upgraded.

**513C.1.4 Anchors at corners.** At the roof and floor levels, both shear and tension anchors shall be provided within 2 feet (0.609 m) horizontally from the inside of the corners of the walls.

**513C.1.5 Anchors with limited access.** When access to the exterior face of the masonry wall is prevented, wall anchors conforming to Item 4.b. in Table 5C-E may be used.

**513C.1.6 Anchors at interior and party walls.** When floor or roof framing aligns vertically at party and interior masonry walls, continuous anchors shall be utilized to directly connect the floor or roof framing on either side of the wall. Where the roof or floor framing is offset more than the least depth of any adjacent framing, the intervening wall section shall be investigated for cross wythe shear assuming that the diaphragm to wall tensions on either side of the wall are acting in opposite directions.

**513C.2 Diaphragm Shear Transfer.** Bolts transmitting shear forces shall have a maximum bolt spacing of 6 feet (1.829 m) and shall have nuts installed over malleable iron or plate washers when bearing on wood and heavy cut washers when bearing on steel.

**513C.3 Collectors.** Collector elements shall be provided which are capable of transferring the seismic forces originating in other portions of the building to the element providing the resistance to those forces.

**513C.4 Ties and Continuity.** Ties and continuity shall conform to SFEBBC Section ~~303.4~~ 304.4.

### **513C.5 Wall Bracing.**

**513C.5.1 General.** Where a wall height-to-thickness ratio exceeds the specified limits, the wall may be laterally supported by vertical bracing members per Section 513C.5.2 or by reducing the wall height by bracing per Section 513C.5.3.

**513C.5.2 Vertical bracing members.** Vertical bracing members shall be attached to floor and roof construction for their design loads independently of required wall anchors. Horizontal spacing of vertical bracing members shall not exceed one-half the unsupported height of the wall nor 10 feet (3.048 m). Deflection of such bracing members at design loads shall not exceed one-tenth of the wall thickness.

**513C.5.3 Intermediate wall bracing.** The wall height may be reduced by bracing elements connected to the floor or roof. Horizontal spacing of the bracing elements and wall anchors shall be as required by design but shall not exceed 6 feet (1.829 m) on center. Bracing elements shall be detailed to minimize the horizontal displacement of the wall by the vertical displacement of the floor or roof.

**513C.6 Parapets.** Parapets and appendages not conforming to this chapter shall be removed, or stabilized or braced to ensure that the parapets and appendages remain in their original position.

#### ***EXCEPTIONS:***

1. Parapets, appendages and roof-to wall-tension anchors which have already been removed, stabilized or braced to comply with Chapter 5D of this code or previous codes pursuant to an

application filed before the effective date of this ordinance need not be reanalyzed or restrengthened.

2. Parapets whose heights do not exceed 3 times their thicknesses need not be removed, stabilized or braced, provided they are located either immediately adjacent to a normally inaccessible court or yard or another building. In the case of an adjoining building, the top of the parapet of the building under consideration shall not be more than 12 inches (0.305 m) above the top of the parapet of the adjoining building. In order to qualify for this exception, the owner must execute an agreement with the Department to voluntarily abate any hazard that may arise as a result of changed conditions such as demolition of the adjacent building or development or occupancy of the adjoining court or yard. The owner must record the agreement with the County Recorder on a form satisfactory to the Department and supply a copy of the recorded agreement to the Department.

Parapets previously exempted that would not be exempted under Exception 2 above shall be removed, or stabilized or braced when the building is strengthened.

The maximum height of an unbraced unreinforced masonry parapet above the lower of either the level of tension anchors or roof sheathing shall not exceed 1½ times the thickness of the parapet wall. If the required parapet height exceeds this maximum height, a bracing system designed for the forces determined in accordance with San Francisco Building Code Chapter 16 shall support the top of the parapet. Parapet corrective work must be performed in conjunction with the installation of tension roof anchors.

The minimum height of a parapet above any wall anchor shall be 12 inches (0.305 m).

**EXCEPTION:** If a reinforced concrete beam is provided at the top of the wall, the minimum height above the wall anchor may be 6 inches (170.44 mm).

### **513C.7 Veneer.**

**513C.7.1 Anchorages.** Veneer shall be anchored with approved anchor ties, conforming to the required design capacity specified in this code and placed at a maximum spacing of 24 inches (610 mm) with a maximum supported area of 4 square feet (0.372 m<sup>2</sup>).

**EXCEPTION:** Existing anchor ties for attaching brick veneer to brick backing may be acceptable, provided the ties are in good condition and are corrugated galvanized iron strips not less than 1 inch (25.4 mm) in width, 8 inches (203.2 mm) in length and 1/16 inch (1.59 mm) in thickness or equal.

**513C.7.2 Verification.** The location and condition of existing veneer anchor ties shall be verified as follows:

1. An approved testing laboratory shall verify the location and spacing of the ties and shall submit a report to the Building Official for approval as part of the structural analysis.
2. The veneer in a selected area shall be removed to expose a representative sample of ties (not less than four) for inspection by the Building Official.

**513C.8 Nonstructural Masonry Walls.** Unreinforced masonry walls which carry no design vertical or lateral loads and are not required by the design to be part of the lateral force resisting system shall be adequately anchored to new or existing supporting elements. The anchors and elements shall be designed for the out-of-plane forces specified in San Francisco Building Code Chapter 16. The height or length to thickness ratio between such supporting elements for such walls shall not exceed 13.

**513C.9 Truss and Beam Supports.** Where trusses and beams, other than rafters or joists, are supported on masonry, independent secondary columns shall be installed to support vertical loads of the roof or floor members.

**513C.10 Adjacent Buildings.** Where elements of adjacent buildings do not have a separation of at least 5 inches (127 mm), the allowable height-to-thickness ratios for “all other buildings” per Table 5C-B shall be used in the direction of consideration.

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## SECTION 514C – IN-PLACE MASONRY SHEAR TESTS

**514C.1 Scope.** This section applies when this chapter requires in-place testing of the quality of masonry mortar.

**514C.2 Preparation of Sample.** The bed joints of the outer wythe of the masonry shall be tested in shear by laterally displacing a single brick relative to the adjacent bricks in the same wythe. The head joint opposite the loaded end of the test brick shall be carefully excavated and cleared. The brick adjacent to the loaded end of the test brick shall be carefully removed by sawing or drilling and excavating to provide space for a hydraulic ram and steel loading blocks.

**514C.3 Application of Load and Determination of Results.** Steel blocks, the size of the end of the brick, shall be used on each end of the ram to distribute the load to the brick. The blocks shall not contact the mortar joints. The load shall be applied horizontally, in the plane of the wythe, until either a crack can be seen or slip occurs. The strength of the mortar shall be calculated by dividing the load at the first cracking or movement of the test brick by the nominal gross area of the sum of the two bed joints.

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## SECTION 515C – TEST OF ANCHORS IN UNREINFORCED MASONRY WALLS

**515C.1 Scope.** Shear and tension anchors embedded in existing masonry construction shall be tested in accordance with this section when and as required by this chapter.

**515C.2 Direct Tension Testing of Existing Anchors and New Bolts.** The test apparatus shall be supported on the masonry wall. The distance between the anchor and the test apparatus support shall not be less than one-half the wall thickness for existing anchors and 75 percent of the embedment for new embedded bolts. Existing wall anchors shall be given a preload of 300 pounds (136.4 kg) prior to establishing a datum for recording elongation. The tension test load reported shall be recorded at 1/8 inch (3.18 mm) relative movement of the existing anchor and the adjacent masonry surface. New embedded tension bolts shall be subject to a direct tension load of not less than 2.5 times the design load but not less than 1,500 pounds (682 kg) for five minutes (10 percent deviation).

**515C.3 Torque Testing of New Bolts.** Bolts which are embedded in unreinforced masonry walls shall be tested using a torque calibrated wrench to the following minimum torques:

1/2-inch-diameter bolts – 40 foot-pounds.	
(12.7 mm)	(5.54 M-Kg)
5/8-inch-diameter bolts – 50 foot-pounds.	
(16 mm)	(6.93 M-Kg)
3/4-inch-diameter bolts – 60 foot-pounds.	
(19 mm)	(8.31 M-Kg)

**515C.4 Prequalification Test for Bolts and Other Types of Anchors.** This section is applicable when it is desired to use tension or shear values for anchors greater than those permitted by Table 5C-E. The direct tension test procedure set forth in Section 515C.2 for existing anchors may be used to determine the allowable tension values for new embedded or through bolts except that no preload is required. Bolts shall be installed in the same manner and using the same materials as will be used in the actual construction. A minimum of 5 tests for each bolt size and type shall be performed for each class of masonry in which they are proposed to be used. The allowable tension value for such anchors shall be 40 percent of the average value of the tests for each size and type of bolt and class of masonry.

Shear bolts may be similarly prequalified. The test procedure shall comply with ASTM E 488-90 or such other procedure as is approved by the Building Official.

The allowable values determined in this manner may exceed those set forth in Table 5C-E.

**515C.5 Reports.** Results of all tests shall be reported. The report shall include the test results as related to anchor size and type, orientation of loading, details of the anchor installation and embedment, wall thickness and joist orientation.

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## **SECTION 516C – POINTING OF UNREINFORCED MASONRY WALLS**

**516C.1 Scope.** Pointing of deteriorated mortar joints when required by this chapter shall be in accordance with this section.

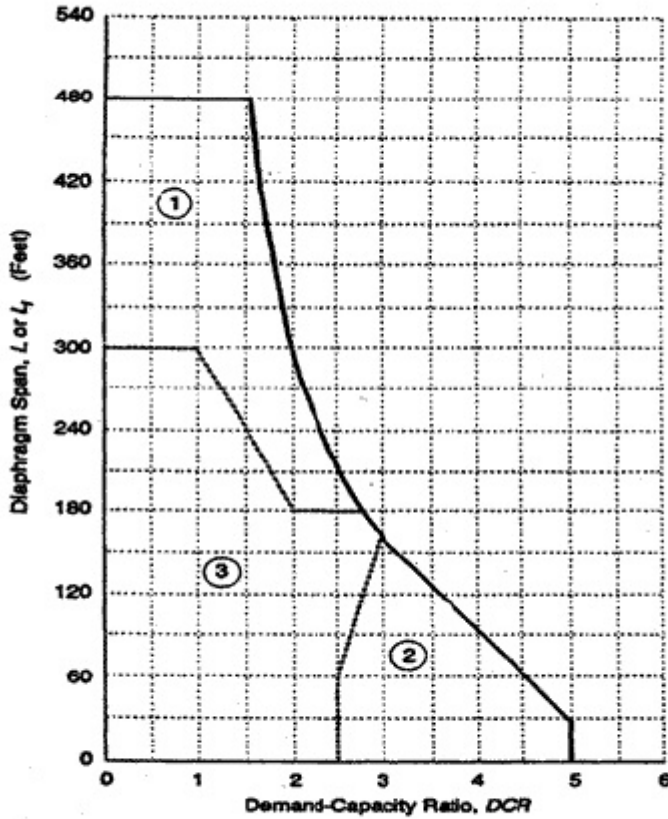
**516C.2 Joint Preparation.** The old or deteriorated mortar should be cut out, by means of a toothing chisel or non-impact power tool, to a uniform depth of  $\frac{3}{4}$  inch (19.1 mm) until sound mortar is reached. Care shall be taken not to damage the brick edges. After cutting is completed, all loose material shall be removed with a brush, air or water stream.

**516C.3 Mortar Preparation.** The mortar mix shall be Type N or S proportions as required by the construction specifications. The pointing mortar shall be pre-hydrated by first thoroughly mixing all ingredients dry, and then mixing again, adding only enough water to produce a damp unworkable mix which will retain its shape when pressed into a ball. The mortar shall be kept in a damp condition for  $1\frac{1}{2}$  hours; then sufficient water shall be added to bring it to a proper consistency that is somewhat drier than conventional masonry mortar.

**516C.4 Packing.** The joint into which the mortar is to be packed shall be damp but without freestanding water. The mortar shall be tightly packed into the joint in layers not exceeding  $\frac{1}{4}$  inch (6.35 mm) in depth until it is filled; then it shall be tooled to a smooth surface to match the original profile.

**FIGURE 5C-1 – ACCEPTABLE DIAPHRAGM SPAN**

FIGURE 5C-1 – ACCEPTABLE DIAPHRAGM SPAN

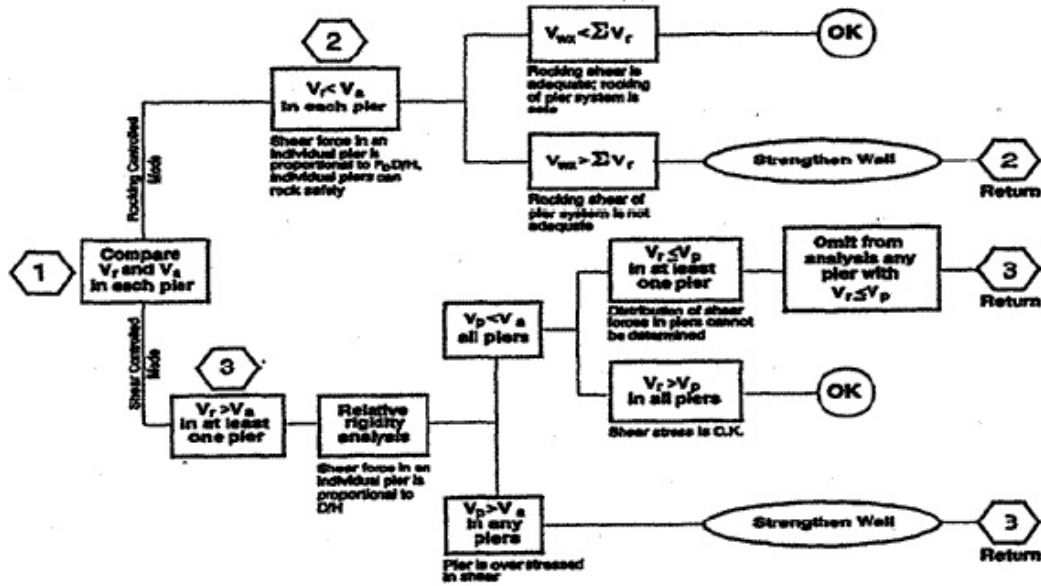


- ① Region of demand-capacity ratios where crosswalls may be used to increase  $h/t$  ratios.
- ② Region of demand-capacity ratios where  $h/t$  ratios of "with crosswalls" may be used.
- ③ Region of demand-capacity ratios where  $h/t$  ratios of "all other buildings" shall be used.

NOTE: To convert feet to meters, multiply by 0.3048.

FIGURE 5C-2 – ANALYSIS OF UNREINFORCED MASONRY WALL IN-PLANE SHEAR FORCES

FIGURE 5C-2 – ANALYSIS OF UNREINFORCED MASONRY WALL IN-PLANE SHEAR FORCES



- $V_r$  = Rocking shear capacity of pier.
- $V_{wx}$  = Total Shear Force resisted by the wall.
- $\Sigma V_r$  = Rocking shear capacity of all piers in the wall.
- $V_p$  = Shear force assigned to a pier on the basis of a relative shear rigidity analysis.
- $V_a$  = Allowable shear strength of a pier.

TABLE 5C-A – ELEMENTS REGULATED BY THIS CHAPTER

ELEMENTS	SECTION	PROCEDURE			
		BOLTS-PLUS	SPECIAL	GENERAL	303.4 304.4 <sup>2</sup>
Masonry Shear Strength	506C.3.3	X	X	X	X
Diaphragms	510C.1			X	
	511C.4		X		
	303.4-304.4			X	
Diaphragm Shear Transfer	510C.1	X <sup>1</sup>			
	511C.5	X <sup>1</sup>	X		

	513C.2	X	X	X	
Chords	511C.4			X	
Diaphragm Capacity Ratios	SFBC 1604		X		
Collectors	513C.3			X	
	513C.4		X		
	<del>303.4</del> <u>304.4</u>				X <sup>4</sup>
Analysis of Vertical Elements	512C		X	X	
Crosswalls	511C.3		X		
Shear Walls	510C.3		X		
	511C.6		X		
	<del>303.4</del> <u>304.4</u>				X <sup>3,4</sup>
Out of Plane Wall Anchorage	513C.1	X	X	X	
	<del>303.4</del> <u>304.4</u>			X	
Ties & Continuity	513C.4		X	X	
	<del>303.4</del> <u>304.4</u>			X	X
Wall Bracing	513C.5	X	X	X	X <sup>5</sup>
Parapets	513C.6	X	X	X	X
Veneer	513C.7	X	X	X	X
Nonstructural Masonry Walls	513C.8		X	X	X
Truss & Beam Supports	513C.9		X	X	X
Adjacent Buildings	513C.10		X	X	X
Subdiaphragms	<del>303.4</del> <u>304.4</u>				X
	SFBC 1604.8.2				
	ASCE 7-16 Section 12.11.2 <sup>4</sup>				

1 Diaphragm shear transfer forces shall be calculated using the General Procedures unless the building qualifies for the use of the Special Procedure.

2 Retrofit procedure per SFEBC Section ~~303.4~~ 304.4.

3 Wood shear walls allowed only for one- or two-story building per San Francisco Building Code Section 2305.1.

4 Only in-plane shear check required. (Rocking not allowed.)

5 Use (h/t) for “All other walls” from Table 5C-B.

**TABLE 5C-B – ALLOWABLE VALUE OF HEIGHT-TO-THICKNESS RATIO OF UNREINFORCED MASONRY WALLS**

<i>WALL TYPES</i>	<i>BUILDINGS WITH CROSSWALLS</i> <sup>1</sup>	<i>ALL OTHER BUILDINGS</i>
Walls of one-story buildings	16 <sup>2,3</sup>	13
First story wall of multistory buildings	16	15
Walls in top story of multistory buildings	14 <sup>2,3</sup>	9
All other walls	16	13
1 Applies to the Special Procedure of Section 511C and the Bolts-plus Procedure of the last paragraph of Exception 1 to Section 509C.2 only. See Section 511C.7 for other restrictions.		
2 This value of height-to-thickness ratio may be used only where mortar shear tests establish a tested mortar shear strength, $v_t$ , of not less than 100 psi (689.48 kPa). This value may also be used where the tested mortar strength is not less than 60 psi (413.69 kPa) and a visual examination of the collar joint indicates not less than 50 percent mortar coverage.		
3 Where a visual examination of the collar joint indicates not less than 50 percent mortar coverage, and the tested mortar shear strength, $v_t$ , is greater than 30 psi (206.84 kPa) but less than 60 psi (413.69 kPa), the allowable height-to-thickness ratio may be determined by linear interpolation between the larger and smaller ratios in direct proportion to the tested mortar strength.		

**TABLE 5C-C – HORIZONTAL FORCE FACTOR,  $C_p$ <sup>1</sup>**

<i>CONFIGURATION OF MATERIALS</i>	$C_p$
Roofs with straight or diagonal sheathing and roofing applied directly to the sheathing, or floors with straight tongue-and-groove sheathing	0.50
Diaphragms with double or multiple layers of boards with edges offset, and blocked plywood systems	0.75
1 Applicable to the Special Procedure of Section 511C only.	

**TABLE 5C-D – ALLOWABLE VALUES FOR EXISTING MATERIALS**

<i>EXISTING MATERIALS OR CONFIGURATION OF MATERIALS</i> <sup>1</sup>	<i>ALLOWABLE VALUES</i>
1. HORIZONTAL DIAPHRAGMS <sup>2</sup>	(x 14.5939 for N/m)
a. Roofs with straight sheathing and roofing applied directly to the sheathing	100 pounds per foot seismic shear
b. Roofs with diagonal sheathing and roofing applied directly to the sheathing	250 pounds per foot seismic shear
c. Floors with straight tongue-and-groove sheathing	100 pounds per foot seismic shear



d. Floors with straight sheathing and finished wood flooring with board edges offset or perpendicular	500 pounds per foot seismic shear
e. Floors with diagonal sheathing and finished wood flooring	600 pounds per foot seismic shear
2. CROSSWALLS <sup>2,3</sup>	(x 14.5939 for N/m)
a. Plaster on wood or metal lath	per side: 200 pounds per foot seismic shear
b. Plaster on gypsum lath	175 pounds per foot seismic shear
c. Gypsum wallboard, unblocked edges	75 pounds per foot seismic shear
d. Gypsum wallboard, blocked edges	125 pounds per foot seismic shear
3. EXISTING FOOTINGS, WOOD FRAMING, STRUCTURAL STEEL AND REINFORCE STEEL	(x 6.895 for kPa)
a. Plain concrete footings	$f'_c = 1,500$ psi unless otherwise shown by tests <sup>4</sup>
b. Douglas fir wood	Allowable stress same as D.F. No. 1 <sup>4</sup>
c. Reinforcing steel	$f_t = 18,000$ psi maximum <sup>4</sup>
d. Structural steel	$f_t = 20,000$ psi maximum <sup>4</sup>
1 Material must be sound and in good condition.	
2 A one-third increase in allowable stress is not allowed	
3 Shear values of these materials may be combined, except the total combined value shall not exceed 300 pounds per foot (2068.43 kPa).	
4 Stresses given may be increased for combinations of loads as specified in this code	

**TABLE 5C-E – ALLOWABLE VALUES OF NEW MATERIALS USED IN CONJUNCTION WITH EXISTING CONSTRUCTION**

<i>NEW MATERIALS OR CONFIGURATIONS OF MATERIALS</i>	<i>ALLOWABLE VALUES</i> <sup>1</sup>
1. HORIZONTAL DIAPHRAGMS <sup>10</sup>	(x 14.5939 for N/m)
a. Plywood sheathing nailed directly over existing straight sheathing with ends of plywood sheets bearing on joists or rafters and edges of plywood located on center of individual sheathing boards	225 pounds per foot seismic shear
b. Plywood sheathing nailed directly over existing diagonal sheathing with ends of plywood sheets bearing on joists or rafters	375 pounds per foot seismic shear
c. Plywood sheathing nailed directly over existing straight or diagonal sheathing with ends of plywood sheets bearing on joists or rafters with edges of plywood located over new blocking and nailed to provide a minimum nail penetration into framing and blocking of 1 5/8 inches (41.28 mm)	75 percent of the values specified in San Francisco Building Code Table 2306.2.1(1)
2. SHEAR WALLS: (GENERAL PROCEDURE)	

Plywood sheathing applied directly over wood studs. No value shall be given to plywood applied over existing plaster or wood sheathing.	100 percent of the value specified in San Francisco Building Code Table 2306.2.1(2) for shear walls
<b>3. CROSSWALLS: (SPECIAL PROCEDURE)</b>	
a. Plywood sheathing applied directly over wood studs. No value shall be given to plywood applied over existing plaster or wood sheathing	133 percent of the value specified in San Francisco Building Code Table 2306.2.1(2) for shear walls
b. Drywall or plaster applied directly over wood studs	100 percent of the values in San Francisco Building Code Table 2306.3(3)
c. Drywall or plaster applied to sheathing over existing wood studs	The values in San Francisco Building Code Table 2306.3(3) reduced as noted in Footnote a of that table <sup>2</sup>
<b>4. TENSION BOLTS</b>	(x 4.448 for N)
a. Bolts extending entirely through unreinforced masonry walls secured with bearing plates on far side of a 3 wythe minimum wall with at least 30 square inches (19,355 mm <sup>2</sup> ) of area <sup>3,4,11</sup>	1,800 pounds per bolt <sup>8</sup>
	900 pounds per bolt for 2 wythe walls <sup>8</sup>
b. Bolts extending to the exterior face of the wall with a 2½-inch (63.5 mm) round plate under the head and drilled at an angle of 22½ degrees to the horizontal, installed as specified for shear bolts <sup>3,4,5</sup>	1,200 pounds per bolt
<b>5. SHEAR BOLTS</b>	
Bolts embedded a minimum of 8 inches into unreinforced masonry walls and centered in a 2½-inch diameter hole filled with dry-pack or non-shrink grout. Through bolts with first 8 inches as noted above and embedded bolts as noted in item 4b. <sup>4,5,9</sup>	½ inch dia. = 350 pounds <sup>7,8</sup>
	5/8 inch dia. = 500 pounds <sup>7,8</sup>
	¾ inch dia. = 750 pounds <sup>7,8</sup>
<b>6. INFILLED WALLS</b>	
Reinforced masonry infilled openings in existing unreinforced masonry walls. Provide keys or dowels to match reinforcing.	Same values as for unreinforced masonry walls
<b>7. REINFORCED MASONRY</b>	
Masonry piers and walls reinforced per San Francisco Building Code Chapter 21	Same values as specified in San Francisco Building Code Section 2107 <sup>6</sup>
<b>8. REINFORCED CONCRETE</b>	
Concrete footings, walls and piers reinforced as specified in San Francisco Building Code Chapter 19 and designed for tributary loads	Same values as specified in San Francisco Building Code Chapter 19 <sup>6</sup>
1 A one-third increase in allowable stress is not allowed, except as noted.	

2	In addition to existing sheathing value.
3	Bolts to be ½ inch (1.27 mm) minimum in diameter.
4	Drilling for bolts and dowels shall be done with an electric rotary drill. Impact tools shall not be used for drilling holes or tightening anchors and shear bolt nuts.
5	Embedded bolts to be tested as specified in Section 507C.
6	Stress given may be increased for combinations of load as specified in this code.
7	A one-third increase in allowable stress is allowed for short-term loading.
8	Other bolt sizes, values and installation methods may be used, provided a testing program is conducted in accordance with Section 515C. Bolt spacing shall not exceed 6 feet (1.83 m) on center and shall not be less than 12 inches (0.305 m) on center.
9	Tension and shear from seismic loads need not be assumed to act simultaneously.
10	Values and limitations are for nailed plywood. Higher values may be used for other approved fastening systems such as staples when approved by the Building Official.
11	Plate size may be reduced to not less than 9 square inches (5805 mm <sup>2</sup> ), provided the bearing stress on the masonry at design load does not exceed 60 pounds per square inch, psi (414 kPa).

*Add the following Chapter:*

## **Chapter 5D PARAPETS AND APPENDAGES – RETROACTIVE PROVISIONS**

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### **SECTION 501D – GENERAL**

Every parapet or appendage which is supported on or attached to an exterior wall of a building adjacent to a property line, passageway, open courtyard or public way or which occurs in any other location where failure of such parapet or appendage would be hazardous to life or limb in such areas shall, when required by the Building Official, be subject to inspection by a licensed architect or civil engineer employed by the owner. The provisions of this section are retroactive and shall apply to and include buildings erected prior to the adoption of this code.

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### **SECTION 502D – CORRECTION OF HAZARDOUS PARAPETS AND APPENDAGES**

Whenever the Building Official determines, by visual inspection or from the report furnished by the architect or civil engineer, that an existing parapet or appendage which is within the scope of this section is not adequate to resist the lateral forces due to earthquake as detailed in Chapter 16 of the San Francisco Building Code which was in effect on July 1, 1969, the Building Official shall conclude that inadequacies exist and shall, by written notice to the owner or person or the agent in charge of the building, direct that necessary steps be taken to eliminate the hazard.

Upon receipt of such notice, the owner or person or agent in control of the building where such hazardous parapet or appendage exists shall:

1. Within one year from the date of receipt of such notice:

(1) Submit to the Building Official an acceptable written plan or procedure for the elimination of the hazardous condition by removal or alteration of the hazardous parapet or appendage.

(2) Obtain the necessary alteration permit in accordance with the procedures set forth in San Francisco Building Code Section 106A.

2. Within one year after obtaining the alteration permit, complete all work indicated on the approved construction documents. A one-year extension may be granted by the Building Official when mitigating circumstances exist.

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## **SECTION 503D – VARIANCE PROCEDURE**

Any person receiving a notice as set out in Section 502D above may appeal for a variance to the Board of Examiners in the manner provided by San Francisco Building Code Section 105A.1.

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## **SECTION 504D – UNREINFORCED MASONRY PARAPETS AND APPENDAGES**

The removal, stabilization or bracing of unreinforced masonry parapets or appendages, the application for a permit for which was filed after February 15, 1993, shall comply with Section 513C.6. Certain parapets or appendages, previously exempted under this section, shall be removed, or stabilized, or braced when required by Section 513C.6.

*Add the following Chapter:*

## **Chapter 5E MANDATORY EARTHQUAKE RETROFIT OF WOOD-FRAME BUILDINGS**

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### **SECTION 501E – PURPOSE AND INTENT**

The purpose of this Chapter is to promote the health, safety, and welfare of San Francisco residents as well as the ability of the City and County of San Francisco to recover from a major earthquake by reducing the possibility of collapse, major structural damage, or risk of fire caused by an earthquake to certain wood-frame buildings.

In furtherance of this purpose, this Chapter establishes seismic retrofit requirements intended to significantly reduce the collapse risk of residential buildings with critically vulnerable lower stories and to increase the likelihood that these buildings will be structurally safe to occupy shortly after an earthquake. The engineering criteria established by this Chapter generally limit the structural retrofit work to the ground story or to a basement or underfloor area that extends above grade where the most critical vulnerabilities are typically located, thereby improving building performance while limiting retrofit costs and impacts.

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## SECTION 502E – SCOPE

This Chapter shall apply to existing buildings, including mixed-occupancy buildings, that are Type V (wood-frame) construction of three or more stories or two stories over a basement or underfloor area that has any portion extending above grade, and containing five or more dwelling units and for which a permit for construction of a new building was applied for before January 1, 1978 or which is determined by the Department to have been originally constructed before January 1, 1978.

### *Exceptions:*

1. A building that has been seismically strengthened to meet or exceed the standards of Section ~~303.4~~ 304.4 of this Code or its predecessor provisions within 15 years prior to the operative date of this Chapter is exempt from this Chapter upon the submittal of documentation showing that such work was properly permitted, completed, and maintained as required by this Code, and that the Department has approved such documentation.
2. A building that has completed voluntary seismic strengthening under the provisions of Administrative Bulletin AB-094 is exempt from the requirements of this Chapter.

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## SECTION 503E – DEFINITIONS

In addition to the definitions in San Francisco Building Code Chapter 2, the following definitions shall apply for purposes of this Chapter:

**DWELLING UNIT.** A dwelling unit shall include any individual residential unit within either an R-1 or an R-2 occupancy building. It shall also include a guestroom, with or without a kitchen, within either a tourist or residential hotel or motel but shall not include a “housekeeping room.” A dwelling unit shall include an area that is occupied as a dwelling unit, whether such is approved or unapproved for residential use.

**STORY.** The first story of any building shall be considered a story, whether or not previously exempted from story count under an earlier edition of the San Francisco Building Code.

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## SECTION 504E – COMPLIANCE REQUIREMENTS

**504E.1 General.** The owner of each building subject to this Chapter shall comply with the reporting requirements of this section. If the building is not exempt and does not meet the minimum criteria specified in this Chapter, the owner shall cause the building to be retrofitted to conform to such criteria according to the compliance deadlines set forth in Table 5E-A. Notice of the compliance requirements shall be given by the Department pursuant to Section 505E.4.

**504E.2 Screening Form.** The owner of a building who has been notified that their building is within the scope of this Chapter as well as all other owners of buildings that may be subject to this Chapter shall engage an architect or engineer to submit to the Department within the time limits set forth in Table 5E-A a properly completed Screening Form.

**Exception:** Buildings exempt based on the exception in Section 502E, Exception 2 of this Chapter may complete and submit the required Screening Form without engaging an architect or engineer.

**504E.2.1 Required information.** The Screening Form to be developed by the Department shall be used to determine whether a building is or is not subject to the requirements of this Chapter, and to assign a building to the appropriate Compliance Tier. The Screening Form shall be completed by an architect as defined in Section 5500 of the California Business and Professions

Code or by a civil or structural engineer registered pursuant to the provisions of Section 6700 *et seq.* of the California Business and Professions Code.

The submitted Screening Form shall include:

1. all information required by the Department to determine compliance requirements, and
2. whether the building is exempt based on Section 502E, Exception 1 of this Chapter, and
3. a Declaration, based on a review of building information, of:

(a) whether the building is exempt because it is outside the scope of this Chapter based on its date of original permit application or construction, number of dwelling units, or number of stories, or

(b) if not exempt, the appropriate Compliance Tier.

**504E.2.2 Optional Evaluation Form.** The Optional Evaluation Form to be developed by the Department shall be used to determine if an existing building already meets the criteria of Section 506E.2 of this Chapter. The Optional Evaluation Form shall be completed by an architect as defined in Section 5500 of the California Business and Professions Code or by a civil or structural engineer registered pursuant to the provisions of Section 6700 *et seq.* of the California Business and Professions Code. The Optional Evaluation Form shall be accompanied by a completed Screening Form and shall include:

1. dates and scope of any seismic retrofit work, and
2. plans and other information as the Department may require that are sufficient to support the Declaration below, and
3. a Declaration of whether the building satisfies the evaluation criteria given in Section 506E .2 of this Chapter.

**504E.3 Compliance Tiers.** Each building not exempt from this Chapter shall be assigned to one of the following Compliance Tiers:

1. Tier I: Buildings that contain a Group A, E, R-2.1, R-3.1 or R-4 occupancy on any story.
2. Tier II: Buildings containing 15 or more dwelling units except for buildings assigned to Tier I or Tier IV.
3. Tier III: Buildings not falling within the definition of another tier.
4. Tier IV: Buildings that contain a Group B or M occupancy on the first story or in a basement or under-floor area that has any portion extending above grade, and buildings that are in mapped liquefaction zones, except for buildings assigned to Tier I.

**504E.4 Application for a building permit.** For each non-exempt and non-complying building, the owner or the owner's authorized agent shall submit to the Department an application for a building permit accompanied by the necessary permit submittal documents indicating the proposed seismic retrofit. A permit for this seismic retrofit work may include minor ancillary work but shall be separate from any other permits for building alterations or repairs unless such work is triggered by or integral to the seismic retrofit work. No work other than is required under current codes shall be triggered by this seismic retrofit work.

**504E.4.1 Compliance deadlines.** Compliance deadlines for the submission of the Screening Form, Optional Evaluation Form, building permit application and for completion of seismic retrofit work are given in Table 5E-A. No transfer of title shall alter the time limits for compliance.

**504E.4.2 Certificate of Final Completion and Occupancy.** A Certificate of Final Completion and Occupancy indicating completion of the required seismic retrofit work shall be obtained upon completion of required seismic retrofit work.

**504E.4.3 Damaged Buildings.** Notwithstanding the provisions of the Table 5E-A Compliance Deadlines, if an as-yet unretrofitted building subject to this Chapter suffers damage from an earthquake or subsequent fire caused by the earthquake that renders the building uninhabitable, results in structural damage that triggers retrofit under regulations adopted by the Department of Building Inspection, or results in “disproportionate damage” as defined in this Code, such building shall comply with the requirements of this Chapter and other applicable Sections of this Code within one year of such damage. The Department may grant an extension of this time period for good cause. Compliance with the provisions of this Chapter does not supersede the requirement to comply with Section 504.3 of this Code when otherwise required by this Code.

**504E.5 Historic Preservation.** If any portion of the seismic retrofit work will be visible from the exterior of the subject property and the San Francisco Planning Department determines that the building is a historic resource, or if the interior of the building has been given landmark status, the seismic retrofit work shall be conducted in accordance with guidelines developed by the San Francisco Planning Department, taking into account provisions of the California Historical Building Code.

## **SECTION 505E – PROGRAM IMPLEMENTATION AND ADMINISTRATION; FEE**

**505E.1 Administrative Bulletin.** The Department shall prepare an Administrative Bulletin detailing the procedural and implementation requirements for this Chapter. Such procedures shall be generally consistent with the requirements set forth in this Chapter. The Administrative Bulletin may require sign-posting and other public information that the Department determines is necessary or appropriate.

**505E.2 Compliance Deadlines.**

**TABLE 5E-A**

**Compliance Deadlines (in years<sup>1</sup>)**

<i>Compliance Tier</i>	<i>Submission of Screening Form and Optional Evaluation Form</i>	<i>Submittal of Permit Application with Plans for Seismic Retrofit Work</i>	<i>Completion of Work And Issuance of CFC</i>
I	1	2	4
II	1	3	5
III	1	4	6
IV	1	5	September 15, 2021

1 All time periods are in years measured from 90 days after the operative date of this Chapter.

**505E.3 Administrative Fee.** The fee for services provided by the Department under this Chapter shall be the Standard Hourly Rate for Plan Review and Administration set forth in San Francisco Building Code Table 1A-D. There shall be no fee required for submittal or review of the Screening Form required by Section 504E.2. A minimum fee corresponding to two hours for plan review and administration is payable upon submittal of a voluntary Optional Evaluation Form. Additional fees may be charged at the Standard Hourly Rate for additional work and will be payable within 30 days of the Department’s notice that payment is due.

#### **505E.4 Notice.**

**505E.4.1 Service of notice on owner.** No later than 90 days after the operative date of this Chapter, the Department shall send a notice in accordance with San Francisco Building Code Section 102A.4.2 to the owner of each building believed to be within the scope of this Chapter. The notice shall inform the owner of the requirement to comply with the provisions of this Chapter, and shall be accompanied by a Screening Form and an informational letter or brochure. Any person who believes that a building that is within the scope of this Chapter has not been so identified by the Department may notify the Department of the address or location of such building. If the Department determines upon review of the building and/or building records that the building may be within the scope of this Chapter, the Department shall provide notice to the owner as provided in this Section.

**505E.4.2 Failure to give or receive notice.** If the owner of a building within the scope of this Chapter has knowledge that they own such a building, then the failure of the Department to issue the notice required by this Section, or the failure of the owner to receive such a notice, shall not relieve the owner of the obligation to comply with the requirements of this Chapter within the time limits set forth in Table 5E-A. For a building not known to the Department to be within the scope of this Chapter and whose owner or owners have no knowledge that the building is within the scope of this Chapter, the time limits set forth in Table 5E-A shall commence upon an owner having actual or constructive notice that the building may be within the scope of this Chapter. In no case, however, shall the final completion date be extended without the approval of the Board of Examiners after hearing an appeal pursuant to Section 505E.5.

**505E.4.3 Notice to public on Department's website.** A list of the buildings by street address and by block and lot for which notice has been given under this Section shall be maintained and made public on the Department's website.

**505E.5 Appeals.** The owner of any building subject to this Chapter may appeal to the Board of Examiners any determination made by the Department with respect to compliance with the technical requirements of this Chapter. Such appeal shall be in accordance with the provisions of San Francisco Building Code Section 105A. The time limits for compliance established by Table 5E-A shall not be extended during any appeal period unless specifically approved by the Board of Examiners. Any person may appeal a determination of the Director related to this Chapter to the Building Inspection Commission pursuant to Chapter 77 of the San Francisco Administrative Code.

**505E.6 Enforcement.** Whenever any required action has not been completed within the time limits set forth in Table 5E-A, the Department shall abate the violation in accordance with San Francisco Building Code Section 102A.

**505E.6.1 Posting of notice.** An enforcement action shall, in every case, include the Department posting of the building with a standard Department notice stating as follows:

“Earthquake Warning. This building is in violation of the requirements of the San Francisco Existing Building Code regarding earthquake safety.”

This notice shall not be removed until the building is in compliance with this Chapter. This notice shall also be recorded against the title of the building. The Building Official shall cause a release of such notice to be filed with the Assessor-Recorder's Office upon conformance with the requirements of this Chapter.

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## **SECTION 506E – ENGINEERING CRITERIA FOR EVALUATION AND RETROFIT.**



**506E.1 General.** This Chapter requires that evaluation and/or retrofit of buildings within its scope be undertaken using the engineering criteria established in this section.

**506E.2 Engineering Criteria.** A proposed seismic evaluation and/or retrofit plan shall demonstrate that the building satisfies one of the following:

1. FEMA P-807. Seismic Evaluation and Retrofit of Multi-Unit Wood-Frame Buildings With Weak First Stories, as detailed in an Administrative Bulletin to be prepared pursuant to 506E.3 of this ordinance, with the performance objective of 50 percent maximum probability of exceedance of Onset of Strength Loss drift limits with a spectral demand equal to 0.50 SMS, or
2. ASCE 41-13. Seismic Evaluation and Rehabilitation of Existing Buildings, with the performance objective of Structural Life Safety in the BSE-1E earthquake, or
3. ASCE 41-06. Seismic Rehabilitation of Existing Buildings, with the performance objective of Structural Life Safety in the BSE-1 earthquake with earthquake loads multiplied by 75 percent, or
4. for evaluation only, ASCE 31-03, Seismic Evaluation of Existing Buildings. With the performance level of Life Safety, or
5. for retrofit only, 2012 International Existing Building Code (IEBC) Appendix A-4, or
6. any other rational design basis deemed acceptable by the Department that meets or exceeds the intent of this Chapter.

**506E.3 Alternative Retrofit Criteria.** A proposed seismic retrofit plan which fails to meet the criteria of 506E.2(1) or 506E.2(5) shall be deemed to comply with this Chapter if with the approval of the Department, it satisfies the intent of FEMA P-807, Section 6.4.2 with a maximum acceptable Onset of Strength Loss drifts limit probability of exceedance of 70 percent.

*Exception:* Alternative retrofit criteria shall not apply to buildings in which the critical stories, basements or underfloor areas contain other than parking, storage, or utility uses or occupancies.

**506E.4 Administrative Bulletin for Technical Requirements.** The Department shall develop and publish one or more Administrative Bulletins that detail the technical requirements to be used for the evaluation and retrofitting of buildings required to meet the criteria established in Section 506E.2.

**506E.5 Conformance Period.** Any building retrofitted in compliance with this Chapter and properly maintained shall not, within a period of 15 years after the operative date of this Chapter, be identified as a seismic hazard pursuant to any local building standards adopted after the date of the building seismic retrofit unless the building incurred disproportionate damage, or otherwise has been damaged or altered so that it no longer meets the engineering criteria under which it was retrofitted.

**506E.6 Compliance with this Chapter does not supersede the requirements for compliance with Section 501E when otherwise under Chapter 5 of this Code. A permit issued solely for compliance with the provisions of this Chapter shall not be considered a “substantial change” or “substantial structural alteration” as defined in Chapter 5 of this code and compliance with Section ~~303.4~~ 304.4 of this code will not be requirement by such work.**

Add the following Chapter:

## **Chapter 5F**

### **BUILDING FACADE INSPECTION AND MAINTENANCE – RETROACTIVE PROVISIONS**

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## SECTION 501F – GENERAL REQUIREMENTS AND SCOPE

All façades of buildings of Construction Type I, II, III, or IV and which are five or more stories are required to be inspected periodically by a qualified professional who shall be a licensed architect or engineer retained by the property owner. The façades are required to be maintained in accordance with the criteria and procedures of this Chapter 5F. For buildings considered to be historic resources, the qualified professional shall have expertise in inspection and maintenance of historic resources. The requirements of this Chapter are retroactive and shall apply to and include buildings erected prior to the adoption of this Code. Qualifications of the qualified professional and inspection requirements are as detailed in the accompanying Administrative Bulletin.

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## SECTION 502F – DEFINITIONS

In addition to the definitions in Chapter 2 of this Code, the following definition shall apply for purposes of this Chapter.

**Façade.** All areas on the exterior of the building including all exterior walls and exterior wall covering, windows, balconies, cornices, parapets, architectural trim and embellishments, appurtenances, and all elements listed in Section 504F.3. The façade also includes walls supported at the roof level, such as penthouse walls and chimneys. A façade shall include walls and appurtenances in the interior of a building where such area has been converted from an exterior area by enclosing the area under a roof, skylight, or other covering.

**Historic resource.** A building designated pursuant to Articles 10 or 11 of the Planning Code or any building listed on, or determined eligible for listing on, the California Register of Historic Resources or the National Register of Historic Places, or that is a “qualified historical building” as defined in the California Historical Building Code.

**Unsafe condition.** A condition of a building that poses an imminent hazard to persons and/or property.

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## SECTION 503F – INSPECTION SCHEDULE

**503F.1 Initial Inspection.** Each building within the scope of this Chapter 5F shall be subject to an initial façade inspection pursuant to Section 504F. Inspection reports are subject to the requirements of Section 505F.

**Exceptions:**

1. Buildings for which a permit application for new construction was submitted after January 1, 1998 are exempt from requirement for an initial inspection. Buildings exempt from initial inspection pursuant to this exception shall begin periodic inspections 30 years from the issuance of the Certificate of Final Completion (CFC) for new construction.
2. Buildings for which comprehensive façade inspection and necessary maintenance, restoration, or replacement has been completed during the 10 (ten) years preceding the date of the required initial inspection report due date may apply to the Building Official for a waiver of the initial inspection.

**Table 503F**

**Initial Inspection Schedule**

Compliance Tier	Building Construction Completion Date <sup>1</sup>	Inspection Report Due Date
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1	Building was constructed prior to 1910	December 31, 2021
2	Building was constructed from 1910 through 1925	December 31, 2023
3	Building was constructed from 1926 through 1970	December 31, 2025
4	Building was constructed after 1970	December 31, 2027
<p>1 Building construction date refers to the date the Department issued the Certificate of Completion for the original building or other Department documentation showing the date of completion of the original construction, regardless of the dates of any additions or alterations.</p>		

**503F.2 Periodic Inspection.** Each building within the scope of this Chapter 5F shall be subject to a periodic inspection at a frequency of 10 years after the required submittal date of an initial inspection report as outlined in Table 503F. Periodic inspections need not include walls and appurtenances in the interior of a building where such area has been converted from an exterior area by enclosing the area under a roof skylight or other covering after an initial inspection and any subsequent necessary repair or stabilization.

**503F.3 Inspection in Response to Damage or Failure.** Notwithstanding the Initial Inspection Schedule set forth in Table 503F or the Exceptions to the initial inspection requirements provided in Section 503F.1, the Department shall require an inspection of façades to be performed in the following circumstance: If façade elements required to be inspected under this Chapter 5F exhibit significant damage or failure as noted by Department staff or property owner or owner’s agent, either during the normal passage of time or due to an earthquake or other event, then the property owner is required to obtain an inspection of the areas of damaged or failed elements and related building elements within 60 days unless the façade poses an unsafe condition. If the Building Official determines that there is an unsafe condition, the provisions of Section 102A shall apply.

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## **SECTION 504F – FACADE INSPECTION AND MAINTENANCE CRITERIA AND PROCEDURES**

**504F.1 Inspection and Maintenance Procedures.** Inspections and maintenance shall be conducted in accordance with procedures to be detailed in an Administrative Bulletin adopted by the Department based on ASTM E 2270 *Standard Practice for Periodic Inspection of Building Façades for Unsafe Conditions* or ASTM E 2841.

**504F.2 Method of Inspection.** Inspections may include both general inspection and detailed inspection as detailed in the Administrative Bulletin.

**504F.3 Elements to Be Included in Inspections.** Inspections shall include the façade elements listed in ASTM E 2270 and the following additional elements:

1. Attached equipment such as communications equipment, pipes and ductwork;
2. Decorative elements such as urns, friezes, balustrades, and attached artwork;
3. Signs;
4. Fire escapes;
5. Flagpoles;
6. Vertical extensions such as vents;
7. Lights and other fixtures;

8. Hanging air conditioners and other devices;
9. Other elements that could pose a safety hazard if dislodged.

**504F.4 Elements Exempt from Inspections.** Inspection is not required for the following conditions:

1. Walls within 36 inches of parallel, facing walls on the same or adjoining properties unless the space between the walls is accessible by means of a door;
2. Walls and appurtenances within exterior courts and yards enclosed by walls on all sides and where the bottom of the court is on grade, unless there is direct access to the court by means of a door;
3. Elements, as approved by the Director, that do not contribute to a safety hazard or that do not require regular maintenance.

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## **SECTION 505F – INSPECTION REPORTS.**

The qualified professional performing any inspection required by this Chapter 5F shall prepare an inspection report in conformity with Section 504D and the Administrative Bulletin adopted by the Department. The property owner or property owner’s authorized agent shall submit a copy of the inspection report to both the property owner and the Department within the time required by Table 503F, provided, however, that the qualified professional shall report any unsafe conditions to the Department immediately notwithstanding the deadline in Table 503F.

Within 60 days of receipt of an inspection report, the Department shall confirm receipt of the report, provide review comments, if any, and confirm timelines and other requirements for maintenance actions and subsequent inspections.

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## **SECTION 506F – FEES**

The Standard Hourly Rates set forth in Table 1A-D shall be charged to compensate the Department for inspection report review, evaluation, and processing related to implementation and enforcement of this Chapter 5F.

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## **SECTION 507F – ENFORCEMENT AND ABATEMENT.**

The Director shall implement the procedures detailed in San Francisco Building Code Section 102A, Unsafe Buildings, Structures or Property, and related abatement actions when any of the requirements for façade inspection, reporting, mitigation, repair, or maintenance are not met in a timely manner.

### **Chapters 6 to Chapter 15**

*These chapters are not adopted in San Francisco.*

### **Chapter 16**

## **REFERENCED STANDARDS**

*No San Francisco Existing Building Code Amendments.*

*Add the following appendices:*

**CALIFORNIA EXISTING BUILDING CODE (CEBC)  
APPENDICES**

**(CEBC) APPENDIX A CHAPTER A1  
SEISMIC STRENGTHENING PROVISIONS FOR  
UNREINFORCED MASONRY BEARING WALL BUILDINGS**

*No San Francisco Existing Building Code Amendments*

**(CEBC) APPENDIX A CHAPTER A2  
EARTHQUAKE HAZARD REDUCTION IN EXISTING  
REINFORCED CONCRETE AND REINFORCED MASONRY  
WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS**

*No San Francisco Existing Building Code Amendments*

**(CEBC) APPENDIX A CHAPTER A3  
PRESCRIPTIVE PROVISIONS FOR SEISMIC  
STRENGTHENING OF CRIPPLE WALLS AND SILL PLATE  
ANCHORAGE OF LIGHT, WOOD-FRAME RESIDENTIAL  
BUILDINGS**

*No San Francisco Existing Building Code Amendments*

**(CEBC) APPENDIX A CHAPTER A4  
EARTHQUAKE RISK REDUCTION IN WOOD-FRAME  
RESIDENTIAL BUILDINGS WITH SOFT, WEAK OR OPEN  
FRONT WALLS**

*No San Francisco Existing Building Code Amendments*

**(CEBC) APPENDIX A CHAPTER A5  
REFERENCED STANDARDS**

*No San Francisco Existing Building Code Amendments*